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NOVEMBER MEDICAL CLINICS

As we promised you in our "Open Letter" advertisement in last week's JOURNAL, we give you today (Page 3) the Complete Contents of the November Number of the "Medical Clinics of North America"—from New York.

And what a strikingly practical number this is—with its two fine Symposia of 13 clinics and 15 other clinics on the common diseases you meet in everyday practice.

Two Symposia, mind you, in this November Number! The first one—on "Gallbladder Disease"—takes up the frequent diseases of the biliary tract. It gives the new diagnostic methods, with a special clinic on Atypical Symptoms. It gives the new and effective plans of treatment.

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THE CLINICAL INVESTIGATION OF FUNCTIONAL STERILITY IN THE FEMALE

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ARTHUR FIRST, M.D.
AND
LEOPOLD GOLDSTEIN, M.D.
PHILADELPHIA

The interpretation of sterility in patients in whom a complete physical examination reveals no anatomic abnormalities in either husband or wife is a complex problem, requiring for satisfactory solution among many things an understanding especially of the interrelationship of the glands of internal secretion.

Before it has been decided that infertility in a female is of endocrine origin, it is of course essential to eliminate every possible extrinsic causative factor. Of prime importance is the postcoital examination, which reveals the true extent of male responsibility, together with the effect of abnormal or hostile cervical secretion on the spermatozoa.

Parenthetically, so conspicuous is the incidence of male deficiency in our clinic that in more than 50 per cent of the patients the two mates are receiving treatment for the barrenness simultaneously. Equally essential is a transuterine tubal insufflation (Rubin test) and the visualization of the tubes by the intra-uterine injection of an opaque oil to determine the presence of occlusion or patency of the tubal canals.

Besides, it is necessary to exclude general causes, such as acute and chronic infections, since conditions of this character not infrequently simulate endocrinic dysfunction. Similarly, congenital underdevelopment of the genital organs in the form of a rudimentary vagina or uterus, stenosis of the vagina or cervix or an imperforate hymen, and neoplasms of all types, must be eliminated as causative influences. Moreover, it must be borne in mind that an antecedent pelvic inflammation, resulting in a thickened tunica albuginea mechanically preventing thereby maturation and rupture of the graafian follicle, may be the sole basis for the infertility.

In dealing with sterility of assumedly endocrine origin, it is of paramount importance to determine, if possible, which gland is primarily responsible, or, as expressed by Lisser,[1] an attempt must be made to determine the uniglandular origin of the polyglandular syndrome in each individual case. From the angle of investigation, functional sterility may be conveniently divided into clinical and laboratory aspects. The diagnosis of endocrine disorders, however, should not be based on laboratory observations alone. For example, a low basal metabolic rate may be due either to pituitary or to thyroid deficiency, and a low blood sugar may be caused by some abnormality in either the adrenals or the pancreas.

The syndromes produced by hypothroidism and hypoadrenalism are at times similar. Clinically, basophilic adenoma of the pituitary gland closely resembles an adenoma of the adrenal cortex. Addison's disease may simulate Simmonds' disease resulting from pituitary destruction. Hence all clinical, physical and laboratory data must be analyzed before a working diagnosis is established.

Etiologically, cases of functional sterility may be due chiefly to primary pituitary, ovarian or thyroid dysfunction. Much less frequently is the condition the result of adrenal disease.

In table 1 there is outlined the differential diagnosis of the three main types of the endocrinopathies.

A. PRIMARY PITUITARY DEFICIENCY

Primary deficiency of the anterior pituitary lobe is by far the most common form of endocrine disturbance encountered in the sterile patients studied in our clinic. Generally speaking, this condition, if not sufficiently severe to suppress totally ovarian function, is usually one of a mild Fröhlich's syndrome (adiposogenital dystrophy). Clinically, these patients are rather short in stature and show distinct stigmas of underactivity of the hypophysis, manifested, first, by a characteristic mammary-mons girdle obesity due to associated involvement of the hypothalamus; secondly, by hypertrichosis with masculine distribution of pubic hair, and, thirdly, by genital hypoplasia with menstrual derangements. Either amenorrhea or menorrhagia is present, the latter indicating a less severe degree of failure on the part of the pituitary gland to stimulate ovarian activity. Stabilization of the autonomic and central nervous systems is especially characteristic of these women, so that dysmenorrhea is rarely a complaint of patients falling in this category.

In severe grades of primary pituitary deficiency there may be characteristic eye changes; namely, a temporal quadrant defect in the red field and relative central or peripheral scotomas of a nonprogressive type. In some patients the laboratory studies disclose impaired kidney function, as evidenced by the presence of albuminuria and a high uric acid content of the blood. Of significant diagnostic importance is an increased sugar tolerance.

The determination of the specific dynamic action of protein has been emphasized by Goldzieher[2] as being of considerable value in the diagnosis of pituitary dis-

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1. Lisser, Hans: Lecture before a Meeting of the Convention of the American College of Physicians, Philadelphia, May 3, 1935.

2. Goldzieher, M. A., and Gordon, M. B.: Determination of the Specific Dynamic Action of Protein and Its Value in the Diagnosis of Pituitary Disease, Endocrinology **17**: 569-577 (Sept.-Oct.) 1933.

ease. This is the total increase in heat production above the normal of the individual occurring after the ingestion of a protein meal. If the whites of three eggs, a slice of toast and a cup of tea without sugar are given after a control basal metabolism test to a normal individual, the increase in two or three hours thereafter is about 16 per cent.

In 192 cases of pituitary deficiency the increase was only 3.8 per cent. Four cases of pituitary tumors showed an average increase of 35 per cent, and seventeen cases of primary hypogonadism showed an average increase of 20 per cent. It may be stated, therefore, that the anterior pituitary lobe produces a hormone that accelerates the specific dynamic action of protein; hence the low values in pituitary hypofunction and the high values in pituitary adenoma with hyperfunction.

The slight increase in the specific dynamic action of protein above the normal in primary ovarian failure is readily understood when it is remembered that this condition is often associated with a hyperfunction of the anterior pituitary lobe.

TABLE 1.—*Differential Diagnosis of Endocrine Hypofunction Associated with Sterility*

Symptoms and Laboratory Studies	I. Pituitary	II. Primary Ovarian	III. Thyroid
Menstrual disturbance	Amenorrhea or abnormal bleeding	Amenorrhea	Menorrhagia
Dysmenorrhea.....	Absent	Common	Absent
Obesity.....	Common, mammary-mons "girdle type"	Underweight	Common, uniform
Nervous system....	Stable	Emotional excess	Stable
Hair distribution..	Profuse; male type	Normal or scanty	Normal
Thyroid.....	Normal	Normal	Enlarged
Genital hypoplasia	Marked	Marked	Moderate
Kidney function...	Albuminuria; increased uric acid of blood	Normal	Normal
Condition of eyes..	Contraction of visual fields	Normal	Normal
Dextrose tolerance	Increased	Normal	Normal
Basal metabolism	Lowered	Normal	Very low
Blood cholesterol..	Normal	Normal	High
Specific dynamic action of protein	5% rise	20% rise	15% rise (normal)
Estrogenic hormone in blood and urine	Low	Low	Low
Anterior pituitary gonadotropic hormone in blood and urine	Not demonstrable	Demonstrable in 50%	Not demonstrable

The hormone studies in anterior pituitary deficiency furnish little additional information. In patients with this condition the anterior pituitary gonadotropic hormone is not demonstrable in the blood, as contrasted to its occurrence in about 50 per cent of patients with primary hypogonadism. The level of estrogenic substance in the blood is below normal.

B. PRIMARY OVARIAN FAILURE (PRIMARY HYPOGONADISM)

Primary ovarian failure is due to inherent deficiency of the internal secretory portion of the ovary independent of the secondary effects of the diminution of function of other glands, notably the pituitary and thyroid. Clinically, these patients present a marked contrast to those of the hypopituitary type. They represent the superlatively feminine type. They are emotional to excess, underweight, visceroptotic and intolerant to food, and experience gastro-intestinal spasticity and irritability of the nervous system.

Hypoplasia of the genital organs and irregular menstruation or amenorrhea are constant observations. Hormone studies reveal a uniformly low estrogenic level in the blood premenstrually. The most significant finding, however, is a demonstrable quantity of anterior pituitary gonadotropic hormone in the blood and urine in more than 50 per cent of the patients. This probably is the result of a compensatory hyperactivity of the hypophysis in an attempt to overcome a failing ovary. In ovarian hypofunction the opportunity for fertilization is thus diminished in direct proportion to the diminution of the number of menses annually.

C. THYROID DERANGEMENT

In thyroid dysfunction either in the form of hypoactivity or hyperactivity there is no palpatory evidence of genital atrophy, though not infrequently it is a cause of sterility. Menorrhagia, as a rule, and not amenorrhea, results from hypothyroidism. In hypofunction of the thyroid the endometrium is often hyperplastic and, as pointed out by Lawrence and Rowe,[3] gives rise to prolonged bleeding when menstruation does occur. Repeated abortion may in some instances be an expression of thyroid failure.

Hyperthyroidism may be differentiated into toxic adenoma and exophthalmic goiter.[4] Toxic adenoma on the one hand is a thyroid condition giving rise to constitutional manifestations while, on the other hand, exophthalmic goiter is a constitutional condition inducing thyroid manifestations. In toxic adenoma only about 20 per cent of the patients experience menstrual trouble, chiefly amenorrhea. In exophthalmic goiter, however, amenorrhea is much more common, owing to the fact that it is a severe constitutional disorder, seriously offending the generative organs and caused possibly by overactivity of the thyrotropic hormone of the anterior pituitary gland.

The diagnosis of the foregoing conditions is relatively easy, provided one resorts as a routine to basal metabolic studies in the investigation of functional sterility.

D. ADRENAL DERANGEMENT

Adrenal deficiency is a relatively infrequent occurrence. Patients with severe adrenal disturbances appear for treatment more because of the general systemic manifestations induced by the glandular disorder than for the sterility itself. Of special interest are those patients with asthenia, loss of weight and low blood pressure—symptoms resulting from moderate adrenal cortical hypofunction. Lawrence and Rowe [5] point out that this may be confused with depressed states of nonendocrine origin. Menstruation is delayed. The sugar tolerance is unusually low and the basal metabolism below normal. Only the lack of bronzing of the skin differentiates this condition from true Addison's disease. Addison's disease may, however, occur without bronzing and is then difficult to distinguish from pituitary cachexia or Simmonds' disease.

Adrenal cortical adenomas may be diagnosed by palpation or by pyelography, revealing a distortion of the upper calices or displacement of the kidney. These neoplasms give rise to increased function of the gland, attended notably by virilism with hypoplasia of the internal genitalia, and resemble in many respects pituitary basophilism. In contrast, however, the patient with a cortical adenoma shows hypertrophy of the clitoris and often a marked excess of estrogenic substance in

3. Lawrence, C. H., and Rowe, A. W.: Studies of the Endocrine Glands: III. The Thyroid, Endocrinology **12**: 377-450 (July-Aug.) 1928.
4. Bram, I.: Toxic Adenoma and Graves' Disease, Northwest Med. **28**: 210-214 (May) 1929.
5. Lawrence, C. H., and Rowe, A. W.: Studies of the Endocrine Glands: V. The Adrenals, Endocrinology **13**: 1-39 (Jan.-Feb.) 1929.

the blood. Furthermore, decalcification of the bones is rare, whereas in pituitary basophilism (Cushing's disease) it is common in the cervical and thoracic vertebrae, owing probably to associated hyperparathyroidism.

INVESTIGATION OF HORMONES

Passing on to further consideration of hormonologic studies in relation to sterility, it may be stated that the determination of ovarian (estrogenic) and pituitary (gonadotropic) hormones in the urine is an extremely valuable laboratory adjuvant in the diagnosis and treatment of the underlying condition as well as of allied menstrual disorders.

1. *Production of Estrogenic Principle.*—During her active sex life, except during pregnancy, a woman normally excretes in the urine from 10 to 20 rat units of estrogenic substance per liter. The curve of the hormone concentration in the urine shows two peaks during the normal menstrual cycle:[6] The first and smaller occurs at about the tenth to the nineteenth day of the cycle and may be correlated with the time of maximum growth of the follicle, ovulation and early corpus luteum formation. A second peak in the urine occurs at about the twenty-first to the twenty-fourth day of the cycle, corresponding to the active phase of the corpus luteum. Thereafter there is a sudden drop in urinary excretion of estrogenic substance followed normally by the onset of menstruation. The normal monthly total output in the urine is about 1,200 to 1,500 mouse units per liter.

The blood cycle for estrogenic substance is likewise characteristic. In the normal menstruating fertile woman 40 cc. of blood does not contain a full mouse unit until seven days before the menses. With the onset of bleeding the blood level again decreases.

2. *Production of Gonadotropic Principle.*—In the blood there is also a cycle of the anterior pituitary gonadotropic hormone. According to Frank, between the eighth and the tenth day a full rat unit is present in the 40 cc. blood specimen. Before and after this period smaller quantities are found. However, in the usual laboratory procedure 30 cc. of blood is withdrawn and 4 cc. of serum is injected in demonstrating anterior pituitary gonadotropic hormone. Fluhmann,[7] in a study of the blood of a large series of women, has divided his patients into four categories. The first two include women with normal menses or with hypoovarian conditions characterized by irregular or delayed menses, scanty periods and amenorrhea. In 136 of these patients only one positive reaction was obtained. In the third group are women in whom there is a total absence of ovarian function; namely, castrates, patients in the postclimacteric state and a certain number with prolonged periods of amenorrhea. In seventy-seven of this group a positive reaction was obtained in forty-nine. In the fourth group are patients with conditions referable to an increase in the hormone secretion of certain glands, those in the menopause, or those with polymenorrhea. In fifty-three of these patients eighteen gave a positive blood test for the gonadotropic hormone.

Kurzrok and his associates[8] describe a definite rise in the gonad stimulating hormone in the urine just preceding or at the time of ovulation, that is, at about the tenth to the thirteenth day of the cycle, when 60 cc. of urine is employed for the concentration. The sudden excretion of this hormone is considered to be the stimulus for ovulation. Hence the greatest incidence of ovulation occurs between the eleventh and the fourteenth day. Except during this brief period normally menstruating women do not excrete the gonadotropic hormone in the urine in quantities sufficient for detection by Zondek's method in 12 cc. of urine.

The estimation of the estrogenic and the gonadotropic hormones in the urine is useful as an index of therapy in menstrual dysfunction. This is based on the fact that normally menstruating women do not excrete demonstrable quantities of gonadotropic hormone in 12 cc. of the urine but excrete from 10 to 20 rat units of estrogenic substance per liter of urine. Kurzrok[9] notes further that four types of excretion are possible when these hormones are considered together:

In type I, estrogenic excretion is positive and anterior pituitary elimination is negative. This indicates a normally functioning anterior pituitary ovarian chain, and these hormones are therefore therapeutically not indicated.

In type II, both hormones are absent.

In type III the estrogenic substance is absent but the anterior pituitary gonadotropic hormone is present. This is the most advanced stage of hypofunction.

In type IV both hormones are present, so that hormone therapy is usually contraindicated.

STUDY OF THE ENDOMETRIUM

In the light of modern knowledge, studies of the endometrium must also be carried out in the investigation of functional sterility. Accordingly, patients with endocrine sterility may be conveniently divided into two groups, depending on the presence or absence of regular menstrual periods.

The endometrium obtained after a diagnostic premenstrual curettage yields valuable information regarding the presence of a suitable nidatory site for the implantation of a fertilized ovum. The absence of a normal secretory premenstrual phase is indicative of failure of ovulation or of a deficient corpus luteum and explains many problem cases of sterility in the regularly menstruating woman. The endometrium is usually obtained easily without anesthesia or cervical dilation with the aid of a small curet, or in accordance with the technic of Klingler and Burch.[10] These investigators designed a small uterine cannula that could readily be passed into the uterus. Suction is made from an attached syringe, and a sufficient amount of tissue is usually obtained to make a diagnosis without the use of the curet. Not only is this procedure of the utmost value from a diagnostic standpoint but it is also sometimes beneficial therapeutically, especially when combined with cervical dilation.[11]

6. Frank, R. T.; Goldberger, M. A., and Spielman Frank: Present Endocrine Diagnosis and Therapy: A Critical Analysis Based on Hormone Studies in the Female, J. A. M. A. **103**: 393-402 (Aug. 11) 1934. Gustavson, R. G., and Green, D. F.: The Quantitative Determination of the Amount of Estrogenic Substances Excreted Daily in the Urine of the Normal Human Female, J. Biol. Chem. **34**: 105 (May) 1934.

7. Fluhmann, C. F.: The Significance of Anterior Pituitary Hormone in the Blood of Gynecologic Patients, Am. J. Obst. & Gynec. **20**: 1-15 (July) 1930; Anterior Pituitary Hormone in the Blood of Women: A Preliminary Clinical Classification of Results in Nonpregnant Individuals, Endocrinology **15**: 177-183 (May-June) 1931; The Biological and Clinical Importance of Ovary Stimulating Hormones, Ann. Int. Med. **6**: 1212-1224 (March) 1933.

8. Kurzrok, Raphael; Kirkman, Irene J., and Creelman, Margaret: Studies Relating to the Time of Human Ovulation, Am. J. Obst. & Gynec. **28**: 319-333 (Sept.) 1934.

9. Kurzrok, Raphael, and Ratner Sarah: The Relation of Amenorrhea Accompanied by Genital Hypoplasia to the Follicular Hormone in the Urine, Am. J. Obst. & Gynec. **23**: 689-694 (May) 1932. Kurzrok, Raphael: The Estimation of Estrin and the Follicle Stimulating Hormone in the Urine as an Index of Therapy in Menstrual Dysfunction, Endocrinology **16**: 361-365 (July-Aug.) 1932.

10. Klingler, H. H., and Burch, J. C.: Suction in Obtaining Endometrial Biopsies, J. A. M. A. **99**: 559-560 (Aug. 13) 1932.

11. Halban, Josef: Gynäkologische Operationslehre, Berlin, Urban & Schwarzenberg, 1932. Cary, W. H.: A Clinical Study of 100 Cases of Developmental and Functional Deficiencies in the Female with Analysis of Treatment and Results, Am. J. Obst. & Gynec. **25**: 335-350 (March) 1933.

In our study we found it somewhat difficult to ascertain the cause of sterility in those women who menstruated regularly every month and who apparently had no gross abnormality in the generative organs. However, a premenstrual curettage performed on one group of fifty regularly menstruating sterile women revealed that only twenty-three had a normal progestational endometrium with characteristic secretory changes

TABLE 2.—*Study of Fifty Regularly Menstruating Sterile Women*

Type of Endometrium Obtained After Premenstrual Curettage	Number of Cases	Results of Treatment: Full Term Pregnancy	Abortion	Failure
Premenstrual	23			
Interval	15			
Hyperplastic	9			
Atrophic	3			
Estrogenic Substance in 40 Cc. of Blood (Premenstrual)				
Positive reaction	13			
Subthreshold	15			
Negative	22			
Total	50	8 (16%)	4 (8%)	38 (76%)

evoked by the corpus luteum hormone, progestin (table 2).

In the remaining twenty-seven patients there was found a hyperplastic, an interval or an atrophic endometrium. In these patients, as emphasized by Novak and by Mazer,[12] sterility may be consequent on failure of ovulation, a condition common in the monkey and occurring probably not infrequently in women. Should fertilization occur, the endometrium is not prepared to retain the embryo, and abortion inevitably results.

RESULTS OF HORMONE STUDIES

In this group of fifty regularly menstruating sterile women, thirty-seven, or 74 per cent, gave no evidence of estrogenic substance in 40 cc. of blood obtained just before an expected period, thus indicating deficient uterine stimulation by the gonads.

A second group of 100 irregularly menstruating women studied in our clinic is more easily understood from the standpoint of sterility (table 3). So closely linked are the menstrual disturbances to the failure to conceive that efforts directed to regulate the "periods" appear as the most important measures available in the successful treatment of infertility.

Over two thirds of this group of 100 women (sixty-four) presented definite evidences of pituitary hypofunction. A smaller group of eight women showed a primary ovarian hypofunction as evidenced, in addition to the clinical stigmas, by the presence of a demonstrable quantity of anterior pituitary gonadotropic hormone in the blood by the Fluhmann method, indicating a compensatory hyperactivity of the pituitary gland in an attempt to compromise for a subfunctioning ovary.

TREATMENT

In considering the treatment of functional sterility, it is of course clear that prophylaxis in the adolescent youth is of the utmost importance. A large number of functionally sterile women cite a history suggestive of glandular disturbance in early adolescence. The resultant incomplete development of the genital organs should therefore be guarded against at this period in order to avoid the possibility of sterility in later life. All endocrine disorders should be treated at once. It is indeed unfortunate if initial complaints referable to a disturbed genital physiology are ignored.

OPTIMAL TIME OF CONCEPTION

Recently, as noted in the literature, renewed interest has been manifested in the age old question as to the most favorable period of impregnation. Generally speaking, one may say that conception is most frequent after coitus following ovulation. Knaus[13] and Ogino[14] contend that the maximum likelihood of conception in women with a regular twenty-six day cycle (in whom ovulation occurs on the twelfth day) will extend from the ninth to the thirteenth day. In women with a twenty-eight day cycle (in whom ovulation occurs on the fourteenth day) the favorable period extends from the eleventh to the sixteenth day. In women with a thirty day cycle (ovulation on the sixteenth day) the favorable period lasts from the thirteenth to the seventeenth day. Theoretically there is ample support of this assumption when one recalls that the female ovum in all animals can live only a few hours and that the spermatozoa usually lose their power of fertilization after forty-eight hours. This observation is not absolute, since ovulation induced by coitus may possibly occur. Sterility, therefore, may be due in some cases to the fact that coitus occurs only during the period of "physiologic sterility."

ORGANOTHERAPY

Despite the noteworthy advance made in the manifold aspects of endocrinology, organotherapy until quite recently was almost void of accomplishment. However, during the past few years a progressive forward movement all along the line has occurred, so that it has at last acquired a fairly scientific basis. In all instances the correction of menstrual irregularities is of vital importance in the treatment of functional sterility. In the administration of endocrine products the interrelationship of the glands of internal secretion must be constantly borne in mind.

TABLE 3.—*Study of One Hundred Irregularly Menstruating Sterile Women*

	Number of Cases	Results of Treatment: Full Term Pregnancy	Abortion	Failure
Pituitary hypofunction	64			
Ovarian hypofunction	8			
Thyroid hypofunction	3			
Hyperthyroidism	1			
Unclassified	24			
Total	100	34%	7%	59%

With regard to the agents employed, the thyroid gland will be considered first.

A. *Thyroid.*—This is a most valuable adjuvant in the treatment of functional sterility and may be used even when the basal metabolism is normal or slightly subnormal. The administration of desiccated thyroid tissue, 1½ or 2 grains (0.09 or 0.13 Gm.) daily, tends

12. Novak, Emil: Two Important Biologic Factors in Fertility and Sterility, J. A. M. A. **102**: 452-454 (Feb. 10) 1934. Mazer, Charles, and Goldstein, Louis: Clinical Endocrinology of the Female, Philadelphia, W. B. Saunders Company, 1932.

13. Knaus, Hermann: Zur Bestimmung des Ovulationstermines in der menschlichen Gebärmutter in situ: Erwiderung auf die Arbeit von G. K. F. Schultze, Zentralbl. f. Gynäk. **56**: 710-720 (March 19) 1932; Geburtenregelung auf natürlichem Wege, Wien. klin. Wchnschr. **47**: 26-28 (Jan. 5) 1934.

14. Ogino, K.: Ueber den Konzeptionstermin des Weibes und seine Anwendung in der Praxis, Zentralbl. f. Gynäk. **56**: 721-732 (March 19) 1932.

to increase cellular activity throughout the entire body, including the endocrine glands. In addition, it has been shown by Van Horn [15] that thyroid neutralizes the effects of estrogenic substance on the endometrium, which may explain the temporary beneficial effects of thyroid therapy in functional uterine bleeding when prolonged and unantagonized action of estrogenic substance on the endometrium is the immediate cause of abnormal uterine bleeding. Cessation of bleeding may also result from stimulation of the anterior pituitary lobe with hyperluteinization.

B. *Estrogenic Substance.*—The chief use of this product is in amenorrhea. It must be remembered that, despite restoration of pituitary function, the marked uterine atrophy, either primary or as a result of a preexisting pituitary deficiency, may in itself become the cause of the continued amenorrhea and sterility. Therapy with estrogenic substance evokes an increase in growth and vascularity of the uterus and renders it, therefore, more responsive to improved or normal ovarian stimulation.

Given by mouth, estrogenic substance is quite efficacious because of the marked stability of the hormone to strong bases, acids and artificial digestion. Orally, estrogenic substance is one fifth as potent as when administered subcutaneously.

If, as pointed out by Mazer,[16] 10,000 rat units of estrogenic substance is given hypodermically to a castrated woman, there will be excreted in the urine 180 rat units the first day, and 10 cc. of blood will give a positive reaction by the Frank and Goldberger method. Eighty rat units is eliminated the second day and 15 rat units, the normal excretion, on the fourth day, at which time 1 mouse unit is found in 40 cc. of blood. Thus it takes four days to obtain the normal equilibrium of estrogenic substance in the urine and blood with this large dose; but, since estrogenic substance inhibits the anterior pituitary lobe in such large dosage, it may actually do harm. One must consider, however, that the estrogenic hormone may have already played an important biologic rôle before its excretion in the urine.

It has been determined by Mazer [16] that 200 rat units administered hypodermically, or 600 rat units orally, in three divided doses daily, will maintain the normal estrogenic level in the castrated woman. This high dosage, however, is not required in the ordinary case of sterility, because in these patients there is actually some degree of ovarian function. It becomes necessary, therefore, to determine the excretion of estrogenic substance in the urine and blood and, if below normal, to administer an amount sufficient to maintain a normal level of daily urinary excretion. A woman who shows one half of the normal level of estrogenic substance should receive only one half of the full therapeutic dose.

The practical application of estrogenic substance in large dosage would have been impossible were it not for the painstaking chemical study and high commercial yield of ketohydroxyestrin or theelin and the discovery by Schwenk and Hildebrandt [17] in Schoeller's laboratory that the partial hydrogenation of this product into a dihydroxyestrin multiplies the yield by 4, thus providing large doses for therapeutic purposes.

C. *Progestin.*—Theoretically, to imitate nature best, estrogenic substance should be combined in the latter third of the menstrual cycle with progestin in order to convert the endometrium primed with estrogenic substance into a suitable premenstrual nidatory phase. This applies especially to regularly menstruating sterile women who fail to show a normal premenstrual endometrium a few days before the expected flow. These injections are preferably given as one-fifth rabbit unit hypodermically every other day for ten days before menstruation. The success of this combined therapy is best revealed by the remarkable results of Kaufmann [18] and Clauberg,[19] who reported transformation of the atrophic uterine mucosa of castrated women into a functioning secretory premenstrual mucosa by the administration of enormous doses of follicular substance (hydroxyestrin benzoate [Progynon B] 320,000 units) followed by large doses of progestin totaling 90 rabbit units.

Prolonged uterine bleeding responds quickly to progestin, although it is only substitutive in effect.

Perhaps the greatest field of usefulness of this product, as pointed out by Krohn, Falls and Lackner,[20] is in the treatment of threatened or habitual abortion. From one-fifth to one rabbit unit is employed every other day to maintain the intactness of the endometrium and to allay uterine irritability.

D. *Anterior Pituitary-Like Gonadotropic Hormone.*—There are now two commercial preparations containing a gonadotropic fraction obtained from the available anterior pituitary itself. However, little or no information is available as to their therapeutic use. The administration of anterior pituitary-like gonadotropic substances, however, is moderately successful in regularly menstruating women in stimulating luteinization and in creating an endometrium favorable for nidation. This substance, elaborated by the placenta and obtained from the urine of pregnant women, is capable of evoking an ovarian response in the rodent qualitatively identical with that of implants and extracts of anterior lobe tissue. Functional uterine bleeding, except during the menopause, if due to pituitary deficiency, responds favorably to this plan of treatment. Two hundred rat units hypodermically is given daily until the bleeding is controlled and thereafter every other day for a period of two months.

In the treatment of amenorrhea due to pituitary deficiency, however, the use of this product is disappointing. Only 10 per cent of this group respond to the treatment with anterior pituitary-like gonadotropic hormone of the urine of pregnant women when it is employed as the sole agent.

It has been demonstrated, however, that the concurrent administration of a low dosage of anterior lobe extract and of a pregnancy urine extract provokes an ovarian response in rats much greater than would be expected from the sum of the responses of the two substances acting alone. Evans and his associates [21] designated this hypophyseal substance the synergist. When combined with the gonad stimulating principle of pregnancy urine, normal gonadotropic effects were

15. Van Horn, W. M.: The Relation of the Thyroid to the Hypophysis and Ovary, Endocrinology **17**: 152-162 (March-April) 1933.
16. Mazer, Charles: Personal communication to the authors.
17. Schwenk, E., and Hildebrandt, F.: Naturwise **21**: 1933.
18. Kaufmann, C.: Echte Menstruation bei einer castrierten Frau durch Zufuhr von Ovarialhormonen, Zentralbl. f. Gynäk. **57**: 42-46 (Jan. 7) 1933.
19. Clauberg, Carl: Die Wirksamkeit des Luteohormons, des spezifischen Hormons des Corpus luteum, am menschlichen Uterus, Zentralbl. f. Gynäk. **56**: 2460-2463 (Oct. 8) 1932.
20. Krohn, Leon; Falls, F. H., and Lackner, J. E.: On the Use of Lutein Hormone, Progestin, in Threatened and Habitual Abortion, Am. J. Obst. & Gynec. **29**: 198 (Feb.) 1935.
21. Evans, H. M.; Simpson, Miriam E., and Austin, P. R.: Further Studies on the Hypophyseal Substance Giving Increased Gonadotropic Effects when Combined with Prolan, J. Exper. Med. **58**: 545-559 (Nov.) 1933.

secured even in hypophysectomized animals.[22] Clinically this was recently employed by Mazer and Katz,[23] who reported a favorable response in thirteen of a group of twenty-four amenorrheic women showing definite stigmas of pituitary deficiency. Hypodermic injections of 3 cc. of anterior pituitary lobe extract and from 50 to 100 rat units of anterior pituitary-like gonadotropic hormone given every other day for a period of two months gave far better results than the

TABLE 4.—*Estrogenic and Gonadotropic Factors in Urine as Index of Therapy*

Type	Estrogenic Factor	Gonadotropic Factor	Endocrine Dysfunction	Treatment
I	10-20 rat units per liter	Absent	Normal function	Other glands
	Less than 10 rat units per liter		Hypofunction with amenorrhea	Gonadotropic factor alone or gonadotropic factor plus estrogenic factor or gonadotropic plus anterior pituitary lobe extract
			Hypomenorrhea or oligomenorrhea	Gonadotropic factor plus growth hormones
	More than 20 rat units per liter		Endometrial hyperplasia, hypermenorrhea; hyperhormonal amenorrhea	Gonadotropic factor, thyroid, insulin, progestin
II	Absent	Absent	Marked hypofunction with amenorrhea or oligomenorrhea	Gonadotropic factor plus estrogenic factor; gonadotropic factor plus anterior pituitary lobe extract
III	Absent	Present	Castration, menopause, radiation	Huge doses of estrogenic factor
IV	Present	Present	Pregnancy; genital carcinoma; glandular syndromes	

administration of gonadotropic hormone alone. This is especially valuable in Fröhlich's disease.

Nineteen of the entire group of fifty responded to the injections in the form of six or more menstrual flows at regular intervals.

E. *Insulin.*—This preparation employed in a dose of 10 units administered a half hour before breakfast and dinner is chiefly effective in cases of primary ovarian failure. Not only is body weight increased but distinct improvement in genital function is noted.[24]

ANTIHORMONES

Recently, organotherapy received somewhat of an adverse blow owing to the discovery by Collip[25] of antihormones or specific antagonistic substances in the blood which nullify continuous injections. Hence while the injection into animals of anterior pituitary-like principle from the urine of pregnancy results first in increase in the size of the ovaries, this is followed on repeated injections by regression to normal dimension despite continued administration. An antihormone has been demonstrated for the thyrotropic principle of the anterior pituitary lobe and likewise for the growth factor and for the ketogenetic principle.

Loeb[26] points out that these antihormones may result from the presence of protein in the extracts employed from which the active fraction of the molecule has not been separated. This might not be produced by crystalline hormones. Thus, with the administration of estrogenic substance, which is a pure product, Mazer[16] found no antihormones in the serum of women injected with as much as from 100,000 to 500,000 rat units of estrogenic substance.

Although the possibility of the development of antihormones during the administration of these preparations emphasizes the necessity for the utmost caution in the clinical use of endocrine products, this should not hinder the proper employment of organotherapy.

IRRADIATION

In low dosage irradiation of the pituitary gland and ovaries, one finds the most potent therapeutic agent for the treatment of menstrual disturbances with functional sterility associated. Strict adherence to all the technic laid down by the roentgenologist is most essential, from 50 to 80 roentgen units or from 7.5 to 12.5 per cent skin erythema dose being given weekly over a period of six weeks.[27] The one menstrual disorder that almost invariably fails to respond is hypomenorrhea (scanty flow) in regularly menstruating women. The cause of the menstrual deficiency in these patients is apparently within the uterus itself.

In table 5 it is observed that, of a total of seventy-one women with menstrual disturbances, twenty-seven, or 38 per cent, were cured with low dosage irradiation of the pituitary gland and ovaries. In a group of thirty-four women with functional sterility associated with menstrual disturbances, pregnancy followed after irradiation in seventeen, or 50 per cent.

ANALYSIS OF RESULTS

The analysis of our results (tables 2, 3, 5) obtained by various forms of therapy, including hormone administration, dilation and curettage and low dosage irradiation of the pituitary gland and ovaries, reveals that of 150 sterile women fifty-three, or 35 per cent, subsequently became pregnant, though only forty-two carried to full term. Eleven aborted before the sixth month of gestation. Ninety-seven women did not become pregnant, although many of these were definitely improved clinically.

TABLE 5.—*Value of Low Dosage Irradiation of Pituitary Gland and Ovaries in Menstrual Irregularities*

Menstrual Disturbance	Cases	Cured	Per Cent
1. Amenorrhea			
Primary	1	8	30
1 year	6	..	..
4 months	19	..	..
6-13 weeks	33	15	15
2. Metrorrhagia	8	3	37
3. Menorrhagia	3	1	33
4. Hypomenorrhea	1	0	0
Total	71	27	38
Functional sterility with menstrual disturbances	34	17	50

SUMMARY AND CONCLUSIONS

1. In the investigation of functional sterility in women it is essential to remember that the condition is frequently dependent not on a single but on manifold factors and that both partners to a barren marriage must be systematically studied.

2. Hormonologic as well as other investigations should be made as a routine, since in many instances the endocrine structures are etiologically related to the sterility.

22. Evans, H. M.; Penchara, R. I., and Simpson, Miriam E.: The Repair of the Reproductive System of Hypophysectomized Female Rats by Combinations of an Hypophyseal Extract (Synergist) with Pregnancy Prolan, Endocrinology **18**: 601-606 (Sept.-Oct.) 1934; Maintenance and Repair of the Reproductive System of Hypophysectomized Male Rats by Hypophyseal Synergist, Pregnancy-Prolan and Combinations Thereof, ibid. **18**: 607-618 (Sept.-Oct.) 1934.

23. Mazer, Charles, and Katz, B. R.: Clinical Evaluation of Combined Prolan and Anterior Pituitary Therapy, Endocrinology **17**: 709-722. (Nov.-Dec.) 1933.

24. Williams, G. A., and Williams, R. L.: Insulogenic Stimulation of Sexual Development, J. A. M. A. **104**: 1208-1210 (April 6) 1935.

25. Collip, J. B.: Inhibitory Hormones and the Principle of Inverse Response, Ann. Int. Med. **8**: 10-13 (July) 1934; William Henry Welch Lectures: Some Recent Advances in the Physiology of the Anterior Pituitary, J. Mount Sinai Hosp. **1**: 28-71 (May-June) 1934.

26. Loeb, Leo: Mechanisms in the Development of an Active Resistance to the Effects of the Substances Stimulating the Thyroid Gland in the Guinea-Pig, Science **80**: 252-253 (Sept. 14) 1934.

27. Edeiken, Louis: Small Doses of X-Ray for Amenorrhea and Sterility, Am. J. Obst. & Gynec. **25**: 511-516 (April) 1933.

3. Examination of endometrial curettings obtained premenstrually offers an explanation of many otherwise obscure cases of sterility in regularly menstruating women.

4. With the aid of modern methods of investigation, very little and in many instances no difficulty at all is encountered in recognizing the various types of endocrinic sterility.

5. Prophylaxis in adolescence, regulation of the diet, attention to the optimal time of conception and other measures at one's disposal merit careful consideration before organotherapy is instituted.

6. Low dosage irradiation of the pituitary gland and ovaries is of value in functional sterility chiefly because of its salutary effect first on these structures and secondly on the menstrual process.

7. Of 150 women with functional sterility treated in our clinic, fifty-three, or 35 per cent, conceived.

8. In the light of rapid advances being made in the understanding of the relationship of endocrine disharmony to functional sterility, together with the scientific preparation of potent glandular agencies, one may now hold forth some assurance of relief for functionally sterile women.

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STERILITY

ANALYSIS OF CAUSES AND TREATMENT

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Sterility is to be defined as the inability of a couple to effect or accomplish a pregnancy. This is a better working definition than that which includes women who abort habitually, or those, later in pregnancy, whose fetuses regularly die in utero, because a woman who is able to conceive is not actually sterile. Moreover, this definition shares the responsibility between wife and husband, as is proper, but should be modified by stating that a mating cannot be considered sterile until after one year of unsuccessful attempts at pregnancy.

The term primary sterility is applied to marriages from which no pregnancy has resulted, and secondary sterility to those in which, after one or two pregnancies have occurred, further conception becomes apparently impossible.

Absolute sterility is that condition in which anatomic or genetic faults or pathologic changes make pregnancy impossible, at least for the time being.

In relative sterility, pregnancy is not impossible but is impeded or interfered with by various factors.

These definitions and terms conform with those either suggested or favored by Meaker [1] in his recent monograph on human sterility. For the sake of uniformity in the detailed consideration and treatment of these cases, it is to be hoped that Meaker's classification may soon be generally adopted as standard.

It is interesting to note that there has been a rapid advance within recent years in knowledge of the various causes of sterile marriages. Parallel to this, a simultaneous advance in its effective and successful treatment is now taking place.

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Meaker, S. R.: Human Sterility, Baltimore, Williams and Wilkins Company, 1934.

It is my purpose to outline as briefly as possible the essential details in the routine investigation of a case of relative sterility, the treatment logically being directed against the faults found. I shall also report an analysis of a total of 113 cases, together with some comments on what has been almost a closed subject; namely, the treatment of absolute sterility.

ROUTINE OF STUDY

Occasionally the physician is consulted by the husband and wife together, but more often it is the wife who comes alone to discover why the marriage has not resulted in children. This is a result of the idea still so prevalent among laymen that sterility is usually due to some fault in the wife rather than in the husband.

The first and most essential step is to explain to the couple the complex nature of sterility and the fact that certain systematic steps must be carried out in complete detail in order to discover as many as possible of the several causes in every case. It should be explained that these are often trivial in themselves until added together, when the total effect of these various factors causes a couple to be sterile. Consequently, unless they understand completely and agree to undergo the necessary study, it is usually best for them not to begin.

The secret of success in the treatment of sterility lies in carrying out in regular sequence every essential step in the study as outlined. If the investigator finds one or two important factors which in themselves might account for the sterility, he must not stop here, satisfied that this is the full answer. If he does, his results will be relatively poor, because every case presents not one or two but a number of faulty factors on both sides. He will find the others if he goes on with the study. It is by removing all instead of merely a few of the faults that really spectacular results may be achieved in the form of a high percentage of pregnancies. Confirmation of this will be noted in the accompanying tables.

The essential steps in a study of sterility should be outlined as follows: (1) history and general physical examination of the wife, including blood count and urinalysis, followed by (2) pelvic examination; (3) history and general physical examination of the husband, including blood count and urinalysis; (4) examination of his genital organs; (5) estimation of basal metabolic rates of husband and wife; (6) examination of spermatic fluid from a condom-to-bottle specimen, as well as a later postcoital examination of spermatic fluid recovered from the cervical canal (Huhner test); (7) tests for tubal patency by insufflation (Rubin test); (8) such other measures as may be necessary, including injection of uterus and tubes with opaque mediums for roentgen visualization, and the Frank estimation of circulating estrogenic hormone and follicle-stimulating factor or the excretion of these in the urine as determined by Kurzrok's method, as well as the galactose tolerance test as a gage of pituitary function.

With the possible exception of the roentgen visualization of the tubes and the laboratory estimations of estrogenic substance, and the galactose tolerance test, the minimum requirements of a sterility study are that all these steps must be carried out. The couple cannot have this too firmly impressed on them.

Meaker has expressed the view that sterility studies cannot be properly conducted except through the medium of an elaborate clinic or group of clinicians and an extended investigation continued over a minimum of a week's time. Such a plan, involving the

routine services of a gynecologist, a urologist, an internist and a pathologist or chemist, as well as, frequently, a roentgenologist and others, obtains the best and most rapid individual results, as Meaker has shown. He reports 50 per cent of pregnancies, namely, eighteen occurring in thirty-six instances of relative sterility thus studied and treated.

Nevertheless, such an investigation is economically impossible for average couples, and I have reviewed sixty-seven cases of relative sterility from my own practice studied completely according to my standards but much more simply than his and thus available to a larger number. Among these I am able to report pregnancies occurring in thirty-three, or 49.2 per cent, of the couples.

TABLE 1.—*Sterility Series*

Total cases: 113	(*a*) Absolute	25 (22.1%)
	(*b*) Relative	88 (77.8%)
Analysis of 88 cases of relative sterility: Total pregnancies: 38, or 43.1%		
Cases completely studied..... 67; pregnancies 33, or 49.2%		
Cases not completely studied 21; pregnancies 5, or 23.8%		

It is advantageous, whenever possible, to develop a group for special studies; but, with the exception of the gynecologist and the urologist, the consulting specialists in our less formal Pittsburgh group are reasonably reserved for those patients in whom it is apparent that certain specific investigations are required. It is the gynecologist who is usually first to be consulted, and each husband is referred as a routine to the urologist. A minimum course of study can be carried out by these two, as has been outlined. This will usually disclose any more obscure features which need special attention. Obviously, it is more possible economically for a couple to have such an investigation than to require them to undergo in routine sequence a number of highly technical tests of questionable necessity.

In other words, a minimum standard of study should be required of all rather than a maximum standard, which is prohibitive or impossible to many. Meaker recognized this clearly in his monograph and discussed the rational use of "incomplete" methods, giving the impression, nevertheless, that such substandards are inadequate and yield only poor or at best fair results. This is mentioned not to decry the value of the more elaborate studies but rather to encourage others to undertake this work even with less complete facilities, because fair success is better than none at all. There is the assurance that with more skill and practice one's results become better, whereupon one's interest and enthusiasm as well as proficiency increase accordingly.

DISCOVERY OF CAUSES

The history, or the general and special examinations, may disclose many factors, each of which alone may be unimportant. Added together, however, they make the imposing total that causes sterility in this couple.

The history, for example, may show dietetic deficiencies (protein and vitamin E starvation), previous debilitating or damaging diseases (mumps with orchitis, scarlet fever, recurrent tonsillitis, anemia, nephritis or gonorrhea). Excessive use of alcohol, too frequent intercourse, the use of acid lubricating jellies with coitus, coitus interruptus followed by chronic passive congestion of the tubes, and similar factors may be important. The husband in one of our couples was a painter and had mild lead poisoning, and until this was corrected none but inactive spermatozoa could be found.

General physical examination often discloses significant but not at all mysterious conditions. The need for blood counts and urinalyses should be apparent.

Pelvic examinations in the female and examination of the male genitalia have a fixed purpose. Hypospadias or epispadias or undescended testicles in the male are important factors, of which at least the first two are mechanically correctable. To explain this statement, the use of a condom with a hole cut at the proper place will direct the seminal fluid in these cases against the cervical os.

In the female, certain special examinations are required. These include a postcoital examination of the spermatic fluid recovered from the cervical canal and the insufflation (Rubin technic) of the fallopian tubes as a test for patency.

The numbers, the motility and its duration, the morphology of the spermatozoa, including an estimation of percentage of abnormal forms, and the viscosity and amount of the spermatic fluid, are factors of importance and have been discussed at length by Moench [2] and others. Cary [3] has mentioned that the chemicals used in the manufacture of rubber condoms may kill spermatozoa. The precaution should be observed, therefore, of instructing the husband to wash the sheath before using it and to empty the contents immediately into a clean glass bottle, which is to be kept warm by being transported to the laboratory in an inside pocket near the patient's body. It must not be overheated or become too cold. Intra-uterine injection of iodized oil for roentgen visualization of fallopian tubes, and special biochemical examinations may be required in some instances. Details of many of these cannot be outlined here because of lack of space but are entirely familiar to the majority in this specialty.

ANALYSIS OF CASES AND RESULTS

The total series of cases that I have to report at present numbers 113. The accompanying tables outline the observations and results in the original group, which included all patients consulting me up to Nov. 1, 1934. This date was chosen in order to allow a minimum of five months to elapse after the last case was completed for the effects of treatment to become manifest. The analysis was finished April 1, 1935. About forty additional cases, with some resulting pregnancies, have been registered since November but are not included, because complete results could not be evaluated in any shorter time than that chosen. The study of the majority of the latter cases was still being conducted or had just been completed and treatment was being given when this paper was completed.

TABLE 2.—*Duration of Sterility: Completely Studied Group (Thirty-Three Pregnancies)*

Years	1	2	3	4	5	6	9	11	13	14	?
Number of cases...	11	5	6	1	1	2	2	1	1	1	2

Primary sterility (nulliparas)	24
Secondary sterility (multiparas)	8
Parity not recorded	1

The value of adequate study is clearly shown by the difference in results obtained in the two groups. In subsequent reports the percentage of completely studied cases will be higher.

Cases listed in the incompletely studied group were unfinished for various reasons. In some of these

2. Moench, G. D.: M. J. & Rec. **126**: 94 (July 20) 1927; Am. J. Obst. & Gynec. **19**: 77 (Jan.), 530 (April) 1930.
3. Cary, W. H.: Personal communication to the author.

instances the husband declined to submit to an investigation. It is not unreasonable to conclude that some of these men were absolutely sterile and knew it, but all the cases without positive information have been included in the relatively sterile group. In others, the investigations were begun but the patient failed to complete the routine, so that tubal insufflation, for example, was lacking in some, or basal metabolism estimations or other tests were not done in others.

REVIEW OF FAULTY FACTORS IN SERIES

It should be reemphasized here that unsuccessful attempts at pregnancy for a period of as long as one year may reasonably be taken as evidence of sterility, according to Meaker.

A review of the numerous faulty factors found in relative sterility includes, among the women, tubal obstruction (relative) in thirty-five instances, endocervicitis in twenty-eight, retroflexion of the uterus in twenty-four, hypothyroidism in thirteen, ovarian dysfunction in ten, anemia, ovarian cyst, fibromyomas in five each, cervical atresia following previous deep cauterization in five, chronic adnexitis in four, pituitary dysfunction in three, cervical polypi and infantile uterus in two each, cervical stenosis, the use of alcohol to excess, protein starvation, tuberculosis and diabetes in one each.

TABLE 3.—*Duration of Sterility: Incompletely Studied Group (Five Pregnancies)*

Years.....	1	2½	5	Exact time not recorded; includes 2 previous marriages and divorces, primipara, aged 44
Number of cases.....	1	2	1	1

Tubal insufflation seemed to be responsible for four of these pregnancies.

Some of the male factors found were hypothyroidism in eighteen, inactive spermatozoa with deficient numbers in seven, sluggish spermatozoa with deficient numbers in seven, more than 20 per cent of abnormal forms of spermatozoa in five, anemia in three, excessive frequency of coitus in seven and excessive use of alcohol in one.

As the technic of the male examination has improved to include viscosity tests, counting of spermatozoa, timing the duration of motility, and examination of stained specimens for morphologic defects, information on these matters has been accumulating so rapidly that much of these data from earlier cases are incomplete here. They are to be made the subject of a separate report at a later date.

The endocrinologic phases of this subject have been purposely avoided, as well as mention of the use of glandular extracts for the stimulation of ovulation and spermatogenesis, because this is to be discussed in the other paper of this symposium. I wish merely to state regarding this that some of the most striking results seen by our group are those in the men showing impaired spermatogenesis. The fact that spermatozoa counts may be made at regular intervals while these men are under treatment permits accurate and significant observations regarding improvement in numbers, motility and morphology of their spermatozoa.

A brief citation of six especially interesting cases will show some of the vagaries of this work:

CASE 22.—A woman had had one child and then was sterile, secondarily, for nine years. The correction of a severe endocervicitis by cauterization, with tubal insufflation, was followed by three pregnancies in close succession, the third of which gave her twins. She then applied for contraceptive advice.

CASE 26.—A nullipara was sterile for two and one-half years, with a lowered basal metabolic rate and prolonged menstrual intervals. Stimulating dosage of roentgen rays to the pituitary, thyroid and ovarian regions, which I usually use in preference to the more uncertain glandular or endocrine therapy, was followed by two normally spaced periods, after which she became pregnant.

CASE 96 (not included in series).—A physician's wife who had had one child was given about six insufflations at weekly intervals by another physician than myself. She had a normal period after the second and one insufflation a week for the next four weeks following the period; she did not have another period and was delivered at full term by me at a time that dates back to the menstruation in the midst of the insufflations. Apparently, after becoming pregnant, she had at least two insufflations without disturbing the embryo, incredible as this seems.

CASE 95.—A woman had recovered from gonorrheal salpingitis, with moderate tubal obstruction overcome fairly readily by insufflation, but this was followed by a tubal pregnancy.

CASE 103.—A nullipara, married one year, with endocervicitis and cervical stenosis, had never used contraceptives. She and her husband had greatly lowered basal metabolic rates. Appropriate treatment of these several faults was followed by pregnancy after two months.

CASE 112.—A nullipara had cystic enlargement of the left ovary, menstrual intervals of from seven to eight weeks, and moderate tubal obstruction. Insufflation was done on or about the ovulation date and she became pregnant at once.

TREATMENT OF ABSOLUTE STERILITY

Having given some of the outstanding points in the causation and treatment of relative sterility, it should also be stated that the majority of instances of absolute sterility in the female, resulting from tubal occlusion, are now correctable by means of certain recent advances in plastic surgical treatment of these conditions. "Clubbed" tubes from perisalpingitis are effectively restored by the "circumcision-cuff" operation; tubes occluded at the cornual ends may have this portion excised and then be implanted into the uterus even more readily than one can implant a severed ureter into the bladder. Sovak has developed the ingenious instruments that he and Holden [4] have described, as well as a precise but simple technic for these operations. A surprising percentage of pregnancies is being recorded following these operations.

When tubes must be or have been removed, implantation of the ovary in or on an orifice in the uterine wall by the modified technic of Estes [5] has been followed by a fair percentage of pregnancies.

Absolute sterility in the male from such causes as obstruction of the epididymis following gonorrheal orchitis can now be corrected fairly readily by a plastic operation. Hagner [6] and others have discussed this in detail.

CONCLUSIONS

1. Relative sterility can be overcome by proper study and appropriate treatment in a ratio nearly of one in every two cases, thirty-three pregnancies, or 49.2 per cent, occurring in sixty-seven couples submitting to complete study and treatment; thirty-eight, or 43.1 per cent, in the entire series of eighty-eight cases of completely and incompletely studied cases.

2. A multiplicity of faulty factors is the rule in these cases, and a systematic routine of study is therefore

4. Holden, F. C., and Sovak, F. W.: Am. J. Obst. & Gynec. **24**: 684 (Nov.) 1932.
5. Estes, W. L., Jr., and Heitmeyer, P. L.: Am. J. Surg. **24**: 563 (June) 1934.
6. Hagner, F. R.: Pennsylvania M. J. **37**: 795 (July) 1934.

necessary. This must include wife and husband and must be complete in certain essential details in order to obtain favorable results.

3. Mechanical faults predominate, while more obscure endocrine disturbances are of lesser frequency.

4. Absolute sterility in the female due to salpingitis or perisalpingitis is correctable in many instances by appropriate plastic operations.

5. Absolute sterility in the male, as from gonorrheal stricture of urethra or occlusion of the epididymis, is usually correctable by comparatively simple plastic operations.

6. The entire subject of sterility in the human being is so much more amenable to treatment than is generally believed that every sterile couple deserves an investigation if they wish to have children.

1015 Highland Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BLAND, FIRST AND GOLDSTEIN AND DR. TITUS

DR. NORMAN R. KRETZSCHMAR, Ann Arbor, Mich.: Necessity for thoroughness in the study of sterility may well be emphasized. Few problems present such a relationship of variegated cause and effect. A definite routine or plan of procedure is advisable. When possible this should begin with a study of the husband. In this connection Belding reports that spermatozoa retain their motility longer at refrigerator temperature than at body heat. Hence temperature precautions for samples of semen to be studied are relatively unimportant. I can confirm Dr. Titus's statement concerning the value of anterior pituitary-like hormone in spermatogenesis. At the University of Michigan Hospital our routine combines all the steps included in the minimal requirements mentioned by Dr. Titus. In our studies uterosalpingography plays an important part. With us this procedure has been no more hazardous than uterotubal insufflation. There were no untoward symptoms in seventy-five cases studied by means of opaque mediums. Plastic surgery on the fallopian tubes is still in its infancy. I agree that it is sometimes desirable, but it should be looked on as a serious measure. The patient and her husband should be thoroughly acquainted with the risks and chances for success. Surgery of this sort, if liberally accepted, may prove a profitable field for the unscrupulous operator. The value of thyroid in cases of sterility with low metabolism in either sex has long been known. It is probable that a more accurate evaluation of gland function will contribute to a higher incidence of success in the treatment of nonfertile marriages. It cannot be said, however, that correction of these dysfunctions by administration of gland extract is yet on a satisfactory practical basis. Haphazard or flighty administration of endocrine substances the action or value of which is still insufficiently proved may do no good and may conceivably cause harm. For example, the exact effect of anterior pituitary-like substances is still somewhat questionable. There is no satisfactory evidence to prove that it produces luteinization of primate ova; indeed, evidence to the contrary is found in Hartman's work with monkeys. He found a preponderance of atretic follicles rather than corpora lutea after injection of anterior pituitary-like substance in these animals. Since there is reason to believe that a similar response occurs in the human ovary, the substance is contraindicated in sterility, for ovulation may actually be retarded. Also, it is clear that little is known concerning the remote effects of these substances. Gonadal stimulation by means of low dosage irradiation presents a paradox in that the action of the x-rays is generally considered to be destructive. Yet it is being recommended more and more frequently in so-called stimulating doses to various glandular structures, including the pituitary and ovary, with apparently good results. As long as this discrepancy exists it would seem wise to be conservative.

DR. EMIL NOVAK, Baltimore: With reference to the results of ovarian therapy I am much less hopeful than Dr. Bland and his associates, feeling that the judicious use of the thyroid more often gives results than do the ovarian or the anterior pituitary-like principle obtained from the urine of pregnant women. Many will think that the rather complicated endocrinologic studies that have been discussed are always essential in studies of sterility and that their omission means a hopeless inadequacy. I do not believe this to be true, and I agree with Dr. Titus that a less elaborate plan is sufficient in the great majority of cases. As yet endocrine studies of the blood and urine have yielded no striking therapeutic results and, as a matter of fact, recent studies on the chemistry of the hormones have confused the whole subject of the significance of the estrogenic output. Many different forms of estrogenic substance have been described, with enormously different potency. No one knows how much estrogenic substance is produced or needed by the body and how much or where or in what form it is destroyed. Valuable as the scientific pursuit of this problem is, the clinician need not feel that he is neglecting his patient if he cannot always carry out such investigations. In the present state of our knowledge he will usually learn more from the microscopic study of the endometrium obtained either by the method advocated by Dr. Bland or, even better in my opinion, by the technic of aspiration-curettage that I described in THE JOURNAL, April 27. As to tubal patency tests, I have always considered the Rubin method simpler and safer than the oil injection technic, while it gives all the information necessary in the vast majority of cases; i. e., whether or not the tubes are open. Finally, a word as to anovulatory menstruation, which certainly explains some cases of sterility, as I have urged for many years. The important desideratum here is to find the factor or factors producing ovulation. I do not believe that either the follicle-ripening or the luteinizing hormone is the ovulating factor but that the essential cause is a delicate quantitative balance of the two. The problem is being intensively studied in various laboratories and the results may be of great value in the treatment of this small but interesting group of cases of sterility.

DR. ISIDOR C. RUBIN, New York: I am glad to note that emphasis is laid on the sterile mating in contradistinction to the sterile male or female. This newer concept has led to more rational investigation of the problem and has proved to be more than merely academic in value. It has helped to improve the results. The results of treatment reported by the readers show the steady progress made in sterility during the past twenty years. The relief of sterility in one of two cases, even in the more favorable groups, is indeed an achievement that was scarcely dreamed of two decades ago. In Dr. Titus's series, 66 per cent of the pregnancies occurred in women married from one to three years; nevertheless there were eleven women, or one third, who were married from four to fourteen years. In this group at least the question of coincidence will not be seriously considered. I mention that because in the results, no matter with what measure one is working, the matter of coincidence or accidental results comes up. I believe that, when one third of a series of women who are sterile from four to fourteen years get pregnant as a result of investigation and treatment, the fact cannot be ignored. It may be stated axiomatically that the earlier the investigation of sterility is entered into the more gratifying will be the results. I agree with Dr. Titus and Dr. Meaker, whom he quotes, that one year of unsuccessful attempts at pregnancy should be considered adequate to judge the fertility of any mating. Much is lost by waiting until three years or more has intervened, when conditions that might have been corrected earlier become more difficult to overcome. In exceptional instances special investigations may be necessary. The use of a clean glass jar for the collection of semen has solved the problem of the spermicidal action of the condom in my experience. Every once in a while the partners in a certain sterile marriage, in either of whom nothing has been found to account for the sterility, have each joined in another marriage that would prove fertile. Apparently the faults were spontaneously corrected or the new partner compensated for the deficiencies. There is no doubt that many of those faults lie in the endocrine field which can now be better appraised and treated. The medical profession is still far removed from the position of assaying relative deficiencies of the inner secretory glands, aside from the thyroid and the pancreas, in spite of the very valuable contributions made in the last ten years in the study of the pituitary, ovary and adrenals. The study of the endometrium by curettage at the

premenstrual period has given much concrete evidence of the function of the ovaries and perhaps of the pituitary also. It gives a biologic assay of that particular woman, but for only one menstrual cycle. One shortcoming of the hormone tests is that they depend on study of one or two samples of blood or urine in a process that is changing from day to day. I think that efforts in reconstructive surgery of the fallopian tubes should continue. I have had eight pregnancies in a series of thirty-three tubal operations, and these results are being duplicated by others.

DR. BENJAMIN R. ALMQUEST, Pittsburgh: As a member of Dr. Titus's group in evaluating prostatovesicular secretions, I am surprised at the number of men falling into the relative infertility and low fertility groups as well as the many borderline cases who objectively and subjectively would seem to be physically fit. Relationships have been reported between the potency of the ejaculate and its hydrogen ion concentration and viscosity. Unpublished preliminary experiments made in the Oliver Memorial Research Laboratory at St. Margaret Hospital, Pittsburgh, under the direction of Mr. Frederick C. Messer, indicate that, unless the specimens of ejaculate studies have been collected and transported entirely out of contact with the air, these two properties undergo marked changes in value as the result of gaseous interchange between the specimen and the atmosphere. This observation casts grave doubt on the value and significance of data previously obtained on specimens less carefully handled. Since it is not practical clinically to obtain samples under such ideal conditions, a study of the biophysical and biochemical properties of prostatovesicular secretions, normal and abnormal, is planned in order to evaluate these factors in terms of others that will be more stable. Incidentally we are planning to carry out hormone assays on male urine in selected low fertility or seemingly absolute sterility cases, and, if hormone is absent, it is probable that efforts to correct faults would be futile. I would emphasize one point in our series which Dr. Titus has reported. To avoid the suggestion of figures we have included all men who did not have definite anatomic faults. Many of these had genetic faults that we probably cannot correct. We believe that our figures otherwise would have shown even higher percentages of pregnancies.

DR. A. D. CAMPBELL, Montreal: Rarely, if ever, does pregnancy occur in women with a consistently short cycle of from twenty-one to twenty-five or twenty-six days. If a corpus luteum cannot sustain the endometrium twenty-eight days, it is unreasonable to hope that an impregnated endometrium can be sustained. It is true that certain women with alleged short cycles do become pregnant, but on close analysis one finds that such women occasionally have twenty-eight day cycles. As yet the cause of polymenorrhea has not been ascertained, and, until more of the physiology of the short cycle has been learned such women must go childless. I am glad to hear that genetics is taking such an important part in this question of sterility, for I feel that the next generation of scientists will not be one limiting its researches to hormones but will be coupling genetics with hormones. The diagnosis of sterility by laboratory methods is an extremely complicated procedure. Furthermore, it is not a question of the presence or absence of any one hormone but of the presence of antihormones. Dr. Collip has found that many sterile and particularly amenorrheal women not only did not have the gonadotropic substance but did have a corresponding antimaturity substance. I think that treating patients indiscriminately with various preparations of unknown quantity, potency or therapeutic action should be discouraged, for I feel that such patients set up an antihormone and that no treatment will be effective thereafter. The rôle played by the transporting mechanism in the fallopian tubes is of primary importance. Not only the peristaltic action of the musculature but the action of the ciliated epithelium must be reckoned with. The action of both the musculature and the epithelium is dependent on endocrine balance. Certainly the injection of a foreign substance, a gas or an opaque oil, will not alter disturbed function, and such practices are not infrequently attended with dangers. As for myself, I have given my insufflation machine away.

DR. ARTHUR FIRST, Philadelphia: I agree with Dr. Novak that probably all laboratory tests are not always essential in the management of functional sterility. However, the combination of laboratory and clinical examinations is of paramount importance in classifying the endocrine dysfunction present. As to the value of low dosage irradiation to the pituitary gland and ovaries in functional sterility associated with menstrual disturbances, it doesn't make any difference whether this has a stimulating effect or whether it causes selective inhibition; regardless of the modus operandi, it nevertheless does produce satisfactory results, as we found that in thirty-four cases of functional sterility associated with menstrual disturbances 50 per cent became pregnant following irradiation. Strict adherence to all the technics laid down by the roentgenologist must be carried out in this form of therapy. We agree with the previous speakers in the fact that one should not become unduly enthusiastic concerning the use of glandular therapy in the treatment of sterility of endocrine origin, nor should one revert to therapeutic nihilism and condemn altogether this form of therapy. We believe that the chief reasons for failure in the administration of organotherapy are, first, the fact that non-endocrinopathic causative factors have not been eliminated; second, improper administration of glandular products, and, third, improper or poor dosage. This is not always the fault of the physician but is often the fault of the manufacturer. Only recently a quantity of gonadotropic substance left with us at the sterility clinic for clinical trial, and reputedly stable and supposed to contain from 50 to 100 rat units per cubic centimeter, when analyzed in our laboratory was found to contain only 1 rat unit per cubic centimeter; so that I might say in concluding that although the greatest caution is urged in evaluating results, we feel that the future is very promising indeed in the treatment of sterility associated with endocrine disturbances.

NATURAL CONCEPTION CONTROL

LEO J. LATZ, M.D., LL.D.
WITH THE TECHNICAL ASSISTANCE OF E. REINER, C.E.
CHICAGO

Economic conditions or other weighty reasons may put couples in a position in which they need to limit their offspring. Conversely, it is also true that there are a great number of women who desire children and who wish to know the most opportune time for a fertile intercourse. Since most women look to their family physician for guidance in this matter, we feel that an intimate acquaintance with this subject is desirable. Our practical experience in the field of natural conception control enables us to present data and corroborative proof showing that the Ogino-Knaus theory as represented is correct and practical for all normal, healthy and regularly menstruating women.

There were several difficulties in the path that prevented scientists from solving this problem during the last few centuries. Nature, so to speak, threw them off their track in their search for the solution by suggesting a similarity between menstruation and heat estrus in animals. In 1883 Cappellmann, following these false hints of nature, set up his theory, which held that women are most fertile during the first fourteen days after the beginning of menstruation and during the three to four days before the next menstruation.

FACTORS GOVERNING THE PERIODICITY IN THE FERTILITY AND STERILITY OF WOMEN

1. The life of the sperm cell within the female genitalia is less than forty-eight hours. The most important factor influencing the length of the fertility of the spermatozoa in a harmful way is the body temperature within the vagina. The scrotum serves as a refrigerating apparatus for the testicles, keeping the spermatozoa at a temperature which is several degrees lower than

that of the circulating blood. Added to this, there is the leukocytosis with phagocytosis and the higher hydrogen ion concentration in the vagina, all of which have a limiting effect on the viability of the spermatozoa.

2. The ovum can be fertilized for only a few hours after ovulation. This is due mainly to two biologic factors, each of which alone would bring about this short life span of the egg cell. Shortly before or just during the process of ovulation the first maturation division of the ovum occurs, according to Godlewski and Fischel;[1] the second maturation division occurs only when the ovum is fertilized. The time interval between these two mitotic cell divisions is short; a sperm must therefore be at hand to serve as a life saver to the ovum. Secondly, soon after the last follicle cells have fallen away from the ovum after its rupture, the smooth surface covers itself with a sheath of albumin as it travels through the tube. This albumin sheath protects the ovum, aids in nourishing it until it has embedded itself in the wall of the uterus and last but not least offers a successful resistance to the penetration of the spermatozoa.

3. Ovulation occurs on the fifteenth day before the beginning of the next menstruation, according to Knaus,[2] and between the twelfth and the sixteenth day before the commencement of the next menstruation, according to Ogino.[3] Knaus proved that the functioning of the corpus luteum exercises a restraining effect on the contractions of uterine muscle, which renders it refractory to the principle of the posterior pituitary lobe. In women with a twenty-eight day cycle, the uterus reacts strongly to injections of solution of pituitary up to the fourteenth day. From the sixteenth day on, the uterus is atonic and no longer responds to pituitary injection. This peculiarity renders it possible to determine the time of ovulation with accuracy. The change in the function of the uterine muscle takes place about twenty-four hours after the bursting of the follicle. It follows that ovulation in women with a regular menstrual history of twenty-eight days must take place during the interval that precedes the time at which the loss to reactivity to principle of the posterior pituitary lobe is observed; that is, on the fifteenth day before the beginning of the next period.

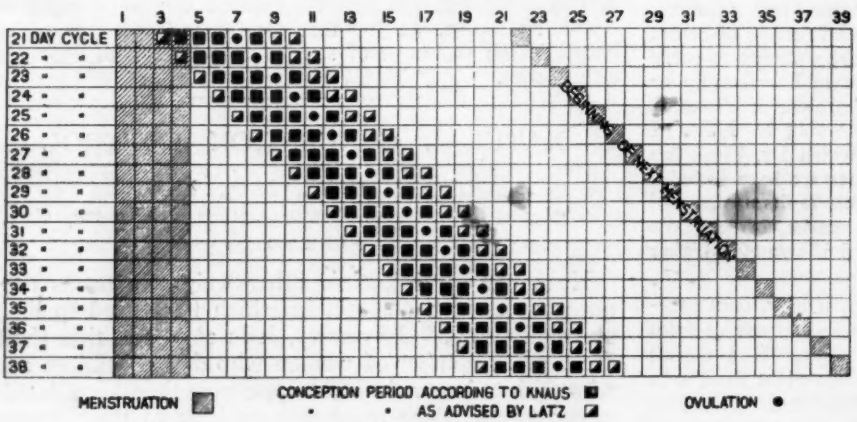

Chart 1.—Conception periods for twenty-one to thirty-eight day menstrual cycles.

Whereas Knaus of Austria largely employed the biologic-experimental method in his studies on the safe period, Ogino of Japan utilized mostly his clinical material in the evaluation of a period of sterility and fertility in women. In his original report he had material comprising 118 laparotomies. By retaining only those women (eighty-one) whose cycles were regular (out of cycles varying from twenty-three to forty-five days), it was found that if one begins to calculate from the preceding menstruation the date of ovulation rested between the eleventh and the thirty-fourth day. But if one figures by beginning from the following menstruation, the greatest regularity in the date of ovulation prevails; it always took place on the twelfth to the sixteenth day preceding the next menstruation. In these operations Ogino did not find corpora lutea before the sixteenth day, nor did he encounter ruptured follicles up to the twelfth day before menstruation. Ogino stressed the important point that ovulation should be figured from the following menstruation, with which it has a causal relationship.

In a discussion of the date of ovulation, it is well to mention the work of Hartman[4] on monkeys; Seitz and Wintz's[5] work with castration doses of x-rays, and Newell, Bland, Edgar Allen and Pratt's[6] observations on human ova during laparotomies and Anderson's[7] on midmonth pain.

Extraordinary, premature or forced ovulation is mentioned by some authors in order to discourage the use of natural conception control. My practical experience indicates very strongly that there is no extraordinary ovulation in human beings. Spontaneous ovulation is the rule in all mammals, except in three species, the rabbit, the cat and the ferret. Induced ovulation seems to be almost a specific trait of these animals. To my knowledge, there has not as yet been reported in the medical literature one case of extraordinary ovulation provoked by coitus. If this were not true, how could one explain the fact that many virgins who menstruate regularly for from five to ten years before their marriage experience no appreciable change in the regularity of their cycles after the wedding? In the first few weeks of the honeymoon there is certainly enough emotional and nervous stimulus present to bring about an extraordinary ovulation if this were possible.

Chart 1 depicts in a graphic way the fertile period in cycles of from twenty-one to thirty-eight days, according to Knaus and its modification as advised by me.[8]

1. Fischel, Alfred: Lehrbuch der Entwicklung des Menschen, Berlin, Julius Springer, 1929.
2. Knaus, Hermann: Periodic Fertility and Sterility in Woman, Vienna, Wilhelm Maudrich, 1934.
3. Ogino, K.: Ovulationstermin und Konzeptionstermin, Zentralbl. f. Gynäk. **54:** 464-478 (Feb. 22) 1930; Ueber den Konzeptionstermin des Weibes und seine Anwendung in der Praxis, ibid. **56:** 721 (March 19) 1932.
4. Hartman, C. G.: Observations on the Viability of the Mammalian Ovum, Am. J. Obst. & Gynec. **7:** 40 (Jan.) 1924; Studies in the Reproduction of the Monkey Macacus (Pithecus) Rhesus, with Special Reference to Menstruation and Pregnancy, Contributions to Embryology, Carnegie Institution of Washington, No. 134, 1932; Pelvic (Rectal) Palpation of the Female Monkey, with Special Reference to the Ascertainment of Ovulation Time, Am. J. Obst. & Gynec. **26:** 600-608 (Oct.) 1933.
5. Seitz and Wintz: Ueber die Beziehungen des Corpus luteum zur Menstruation, Monatschr. f. Geburtsh. u. Gynäk. **49,** 1919.
6. Allen, Edgar; Pratt, J. P.; Newell, Q. U., and Bland, Leland: Human Tubal Ova: Related Early Corpora Lutea and Uterine Tubes, Contributions to Embryology, Carnegie Institution of Washington, **22,** No. 127, 1930; Recovery of Human Ova from the Uterine Tubes, J. A. M. A. **91:** 1018 (Oct. 6) 1928.
7. Anderson, C. W.: Natural Avoidance of Conception, Colorado Med. **30:** 223-227 (June) 1933.
8. Latz, L. J.: The Rhythm of Sterility and Fertility in Woman, ed. 5, Latz Foundation, Chicago, 1935.

For practical reasons in applying the method, when instructing women in its use I have added an additional day before and two days after the fertile period to

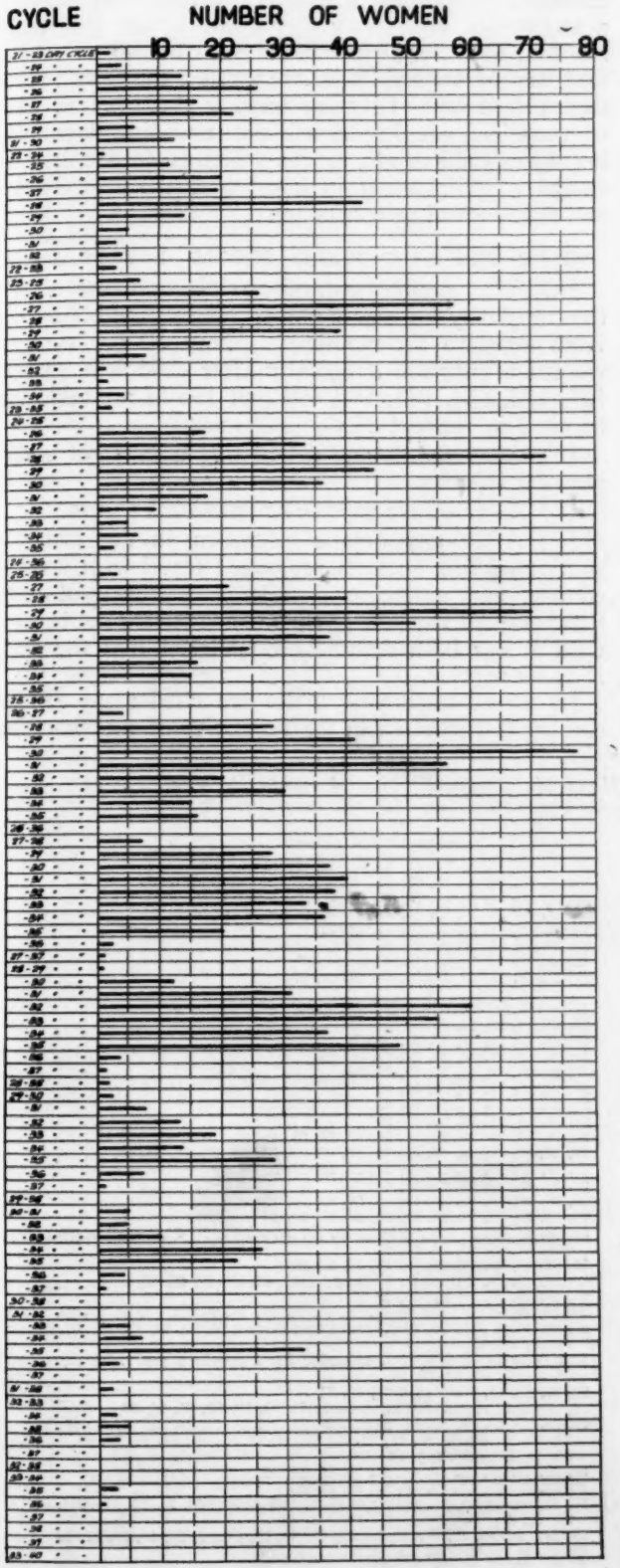

Chart 2.—Menstrual cycles of normal adult women. The number of women having cycles as indicated is shown with heavy lines. All cycles recorded here are based on written menstrual records. The time of observation varies from a period of eight months to one of several years.

allow for possible errors in computation. This gives eight days of abstinence, which I advise in regularly menstruating women.

RULES TO BE FOLLOWED IN THE USE OF THE SAFE PERIOD

1. A written record is made of the dates of the beginnings of menstruations covering a period of at least eight months to one year before applying the method. This is necessary to determine the variation between the shortest and the longest cycle. Patients should also be instructed to record disturbing factors that may upset the regularity of menstruation, such as sickness (even colds), mental shocks or upsets, physical strains, and great change of climate or altitude. This will enable the doctor to make an intelligent interpretation of the data given. Data furnished by memory are of no value.

2. There must be no kind of sexual intercourse during the time of possible conception. Couples have told us of using contraceptives during the period of fertility, which, as every one knows, are not 100 per cent safe, and also of practicing retraction during this period.

TABLE SHOWING NUMBER OF INTERCOURSES EXECUTED DURING THE STERILE DAYS OF LISTED CYCLES

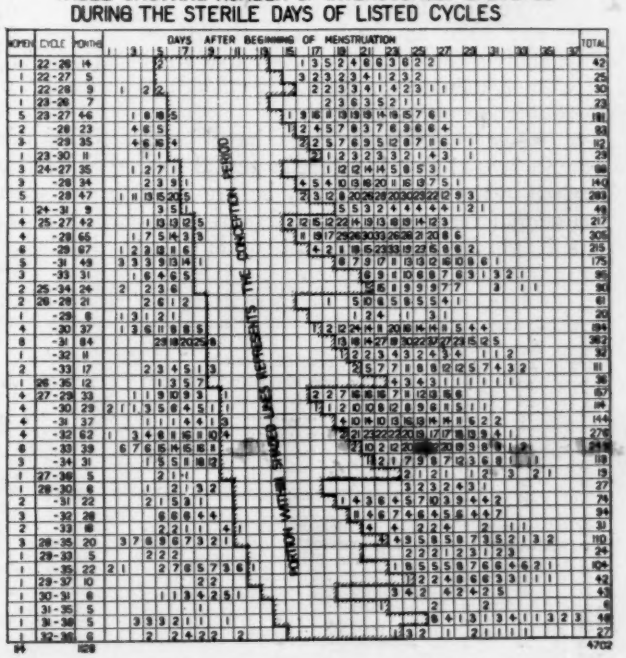

Chart 3.—Number of intercourses executed during the sterile days of listed cycles.

3. A regularity in menstruation must prevail. The menstrual cycle may be either long or short, but the variation should not be more than ten days; a larger variation would make the use of the method unpractical. That most women do not vary more, and therefore can use the method, is shown strikingly in chart 2, which shows the menstrual cycles of 2,000 women, the records of which were sent to us by mail in application for a Concip Calendar. These women were not clinic patients; they represented an average of women who were eager to determine their sterile and fertile periods. They represented accurate written records kept over a period of from eight months to several years. The length of the heavy lines indicates the number of women having menstrual cycles as listed; for example, sixty-three women had a menstrual cycle varying between twenty-three and twenty-eight days. Characteristic in this chart are the ten or eleven separate pyramid-like formations of heavy lines, indicating that women will have either short cycles, such as from twenty-two to

twenty-seven days, or long cycles, such as from thirty to thirty-five days. Important also is the fact that about 90 per cent of these women have variations of from two to eight days, regardless of whether their cycles were short or long. In summary it may be said that:

1	per cent of the listed women vary	2 days
7	per cent of the listed women vary	3 days
13	per cent of the listed women vary	4 days
25	per cent of the listed women vary	5 days
20	per cent of the listed women vary	6 days
15	per cent of the listed women vary	7 days
10	per cent of the listed women vary	8 days
4	per cent of the listed women vary	9 days
3	per cent of the listed women vary	10 days
1	per cent of the listed women vary	11 days
99	per cent (1 per cent vary more than 11 days)	

If one considers that a number of the women whose cycles are listed had possibly one or perhaps two cycles (either long or short) which were due to a disturbance of some kind that was not reported, and therefore were not discarded, the listed cycles do in reality vary not quite as much as is shown on the surface. This chart offers concrete proof that the great majority of women menstruate regularly enough to make use of natural conception control.

4. After these three rules have been satisfied, the woman is told that her fertile period extends from the twelfth to the nineteenth day before her expected menstruation (the expected first day of menstruation being calculated from the longest cycle in the last eight months), plus the days of variation, between the longest and shortest cycle in the last eight months added to the beginning of the fertile period. For example: Supposing a woman has fluctuated between a twenty-six and thirty day cycle in the last eight months; then her first seven days, counting from the first day of menstruation, are sterile; the next twelve days (eight days of regular fertility plus the four days of variation) are fertile, and the remaining days until her menstruation are sterile. She is then asked to record conscientiously in a calendar the intercourses and first days of menstruation.

WHEN THE SAFE PERIOD SHOULD NOT BE USED

(*a*) After confinement, miscarriage or abortion until the regularity of the cycle is reestablished (usually from three to six months). About 50 per cent of women menstruate irregularly after childbirth. Cases 134, 133, 148, 180, 185, 193 and 196 in the table can be cited in support of this statement.

(*b*) After febrile and debilitating diseases or severe physical injuries.

(*c*) After severe psychic or emotional upsets.

(*d*) After any drastic alteration in the ordinary routine of life, such as prolonged travel in a strange climate, and strenuous exercises. During and after these unusual happenings the method should not be used until it has been definitely established that the cycle is again regular.

In the accompanying tables are cited many factors causing disturbances in the regularity of menstruation.

TABLE 1.—*Typical Menstrual Cycles of One Hundred Women Keeping Accurate Records*

Case	Age, Yrs.	No. of Children	State of Health	Residence	Individual Cycles, Days
100	30	3	Healthy but somewhat nervous	New Mexico	Birth, 27, 27, 32, 33, 33, 28, 31, 32, 30, 33
101	26	2	Healthy	Illinois	35, 34, 32, 28, 29, 30, 32, 35
102	36	4	Healthy	Michigan	29, 27, 28, 29, 28, 30, 28, 26, 29
103	33	2	Healthy	Indiana	29, 29, 34, 32, 30, 31, 30, 33, 31, 32
104	37	3	Healthy	New York	Birth, 32, 32, 31, 33, 30, 31, 32, 32
105	33	1	Healthy	Indiana	28, 29. 27. 25. 27. 30. 27. 25. 26
106	26	1	Healthy	Wisconsin	Birth, 29, 28, 29, 34 (excitement), 27
107	35	1	(Child, 10 yrs.); mother mentally deranged for 4 mos. after birth	Ohio	28, 27, 28, 28, 28, 28, 28, 28, 28, 27
108	29	?	Health delicate	Iowa	Miscarriage, 29, 31, 32, 27, 31, 32, 30, 31
109	No personal record (physician)			Illinois	25, 28, 26, 26, 27, 26
110	32	1	(Cesarean birth); healthy	New Jersey	Birth, 25, 26, 27, 25, 29, 30, 26
111	38	5	Healthy	New York	32, 30, 28, 27, 28, 28, 27, 27, 31, 28
112	32	?	Healthy	Minnesota	27, 28, 28, 28, 24, 27, 25, 24, 28
113	30	3	Healthy	New York	28, 30, 28, 30, 27, 28, 30, 28
114	?	?	?	Kansas	25, 25, 25, 25, 27, 24, 25, 25
115	24	2	Healthy	Kentucky	29, 28, 24, 28, 28, 26, 28, 29
116	..	..		Massachusetts	24, 28, 29, 26, 26, 29, 29, 26, 27, 28, 29
117	43	5	Healthy	Iowa	28, 27, 32, 27, 29, 28, 31, 29, 28, 32, 30, 31, 30, 28, 31, 28, 26, 28, 28, 27
118	42	None	Healthy	Massachusetts	25, 28, 27, 25, 27, 28, 28, 25, 26, 28, 25, 28
119	?	5	Healthy	Ontario	22, 22, 22, 24, 25, 23, 22, 24
120	39	?		Illinois	25, 24, 26, 26, 26, 24, 25, 26, 26, 25, 25, 26
121	?	?	?	Ohio	28, 26, 23, 28, 24, 26, 25, 30, 25, 27, 27, 26
122	26	2	Anemic, low blood pressure	Tennessee	32, 30, 28, 26, 36 (hay fever), 32, 28, 31, 35, 33, 27, 32, 37 (whooping cough), 29, 28, 32, 31, 27
123	29	2	(Cesarean birth); healthy	Pennsylvania	31, 32, 27, 33, 30, 28, 30, 33, 28, 32, 29
124	35	None	Insanity in family	Tennessee	22, 26, 25, 25, 25, 24, 27, 33 (abortion), 27, 28, 28, 26, 25
125	29	?		West Virginia	25, 24, 28, 23, 28, 24, 26, 26
126	?	?	?	Massachusetts	28, 29, 26, 27, 28, 27, 27, 27, 28, 27, 26, 28, 26, 28, 29, 26, 26, 29, 29, 26
127	31	None	Thyroid disturbance	Michigan	31, 31, 46, 36, 39, 32, 33 (thyroid operation), 27, 29, 28, 33, 30, 31, 32, 28, 35, 28, 35
128	No other record			Pennsylvania	Had a 29 to 35 day cycle calendar for 2 previous years, 35, 35,29, 32, 31, 35, 33, 33, 30, 31
129	27	2	Healthy	New York	29, 31, 28, 31, 30, 29, 30, 31, 28, 31
130	36	6	Fallen womb	Illinois	34, (mental strain) 39, 32, (miscarriage), 29, 30, 31, 32, 30
131	36	3	Healthy	Indiana	26, 27, 29, 28, 26, 26, 28, 24, 27, 26, 25, 26, 29, 25, 26, 26, 25, 27, 26, 23, 26, 25, 25, 26, 27, 26, 27, 31, 31, 23, 26, 28, 25, 25, 25, 25, 26, 29, 26, 30, 28, 26, 28 (pleurisy), 24
132	?	?		California	30, 30, 29, 25, 26, 27, 29, 26, 28, 28, 25, 26
133	29	1	Healthy	Ohio	Birth, 35, 29, 28, 30, 28, 29, 29, 30, 28
134	27	1	Healthy	Saskatchewan	27, 27, 30, 33, 30, 31, (marriage) 29, (abortion) 40, 34, 26, (birth), 44 30, 27, 27, 29
135	32	?	Healthy	Pennsylvania	28, 29, 29, 28, 27, 30, 29, 28, 28, 28, 29, 30, 27, 28, 29, 29, 30, 27, 28
136	?	?	?	.....	26, 28, 29, 27, 28, 26, 29, 30, 28, 27, 28, 28
137	26	?	Healthy	Washington	27, 27, 27, 27, 27, 28, 27, 29
138	28	?	Healthy	New Jersey	28, 28, 28, 28, 27, 29, 29, 28
139	?	1	?	New York	Birth, 30, 29, 30, 27, 27, 27, 30, 29, 34
140	?	3	Healthy	Indiana	24, 25, 22, 27, 25, 24, 24
141	30	1	Healthy	Illinois	25, 28, 25, 25, 24, 26, 25, 26
142	?	2	Healthy	New York	32, 28, 23, 27, 24, 24, 27, 24, 26, 28, 38 (cold), 25, 25, 29
143	25	1	Leukorrhea	Nova Scotia	31, 25, 28, 26, 28, 15 (diathermy), 23 (diathermy), 28, 28, 28, 27, 32, 29, 25, 30, 28, 26, 27, 29, 17 (diathermy), 32, 30, 29, 25, 28, 25, 27, 28, 27, 25, 29
144	39	8	Healthy	Ohio	Birth, 28, 30, 29, 29, 28, 29
145	38	3	Somewhat anemic	California	26, 24, 26, 27, 24, 25, 23 (extreme cold), 25, 25, 27
146	26	?	?	Pennsylvania	27, 26, 26, 26, 28, 27

Table 1.—*Typical Menstrual Cycles of One Hundred Women Keeping Accurate Record—Continued*

Case	Age, Yrs.	No. of Children	State of Health	Residence	Individual Cycles, Days
147	35	8	(5 ft. 4 in., 220 lbs.); kidney trouble, otherwise good health	Indiana	Birth, 31, 30, 30, 29, 29, 29, 30, 31
148	31	5	Anemic	Indiana	Birth, 24, 28, 29, 33, 30, 28, 25 (mental strain), 30, 26, 30, 26, 29, 27, 28
149	31	None	Ulcerated stomach; now well..	Maryland	(Ulcerated stomach: 39, 38, 32, 39, 31, 30, 37), 29, 29, 30, 29, 28
150	25	?	Healthy	New Jersey	28, 28, 28, 29, 27, 26
151	32	?	?	Minnesota	27, 28, 28, 28, 24, 27, 25, 24, 28, 28, 27, 25
152	32	?	?	Ohio	30, 28, 28, 29, 29, 28, 28, 31, 29, 28, 28
153	?	?	?	Pennsylvania	27, 27, 28, 27, 29, 27, 29, 28, 29, 30, 28, 29, 29
154	26	1	Healthy	Wisconsin	29, 34, 27, 31, 30, 26, 27
155	27	?	?	New York	34, 32, 32, 32, 37, 34, 36, 33, 33, 35, 28, 36, 32, 34, 34, 38
156	25	None	?	Minnesota	27, 29, 29, 29, 28, 28, 28, 30
157	45	11	Healthy	Wisconsin	25, 29, 28, 25, 27, 27, 27, 29, 27, 27, 27, 25, 25
158	39	3	Healthy	Michigan	27, 27, 28, 28, 23, 29, 23, 25, 29, 26, 23, 25, 25, 25
159	?	3	Healthy	Indiana	28, 29, 28, 29, 32, 29, 28, 27
160	42	3	Healthy	Michigan	28, 28, 27, 27, 28, 27, 26, 29, 34 (severe cold), 28, 28, 28, 26, 25 (death in family), 27
161	27	?	Healthy	New York	34, 32, 32, 32, 37, 34, 36, 33, 33, 35, 28, 36, 32, 34, 34, 38
162	26	?	?	New York	28, 28, 26, 29, 29, 27, 28, 27, 27, 30, 27, 28
163	31	3	Healthy	Massachusetts	26, 23, 25, 23, 23, 24, 24, 25, 26, 24, 25
164	28	None	Healthy	New York	26, 27, 26, 26, 27, 29, 27, 26, 26, 26, 27
165	33	3	Healthy	Wisconsin	(Physical and mental stress: 17, 18), 30, 20, 43 (nat. abortion), 28, 26 31, 31, 28, 29, 30, 30
166	28	2	Healthy	Nebraska	30, 32, 31, 32, 32, 29, 32
167	27	None	Healthy	Illinois	30, 30, 33, 31, 29, 31, 31, 34, 32, 38 (physical strain), 32
168	20	None	Healthy	Indiana	33, 29, 30, 29, 32, 25 (mental stress), 31, 30, 29, 32, 28
169	32	5	Healthy	Illinois	31, 28, 33, 29, 35, 30, 32, 27
170	?	?	?	Minnesota	27, 27, 28, 27, 28, 28, 29, 27, 28, 28, 27
171	?	4	Healthy	Ohio	23, 25, 23, 23, 23, 24, 25, 25, 24
172	28	None	5 feet 3 inches, 100 pounds	Minnesota	36, 31, 35, 35, 37, 35, 36, 31, 31, 29, 34
173	24	None	Healthy	New York	27, 27, 27, 25, 27, 26, 26, 24
174	27	None	Healthy	Illinois	26, 25, 26, 24, 26, 25, 28, 30, 28
175	35	5	Healthy	Ohio	Birth, 32, 33, 34, 31, 28, 31, 32, 28, 31, 31, 31
176	?	3	Healthy	New York	Birth, 32, 32, 31, 33, 30, 31, 32, 38 (aunt killed in accident), 30, 31, 30, 32
177	?	?	?	Missouri	27, 31, 31, 32, 29, 27, 26, 27
178	?	?	?	Kansas	Birth, 31, 31, 30, 30, 29, 32, 36
179	27	1	Healthy	New York	27, 29, 30, 28, 27, 27
180	36	4	Healthy	Minnesota	Birth, 22, 40, 29, 28, 36 (physical strain), 25, 27, 29, 30, 26, 31, 26
181	34	2	Healthy	Vermont	28, 28, 28, 27, 27, 29, 26, 26, 30, 28, 28, 28, 29, 29, 28, 28, 28
182	26	None	Healthy	Ohio	31, 31, 36, 31, 32, 31, 31, 31, 29, 32, 33
183	37	2	Healthy	New Jersey	24, 25, 25, 26, 26, 30, 26, 51 (mental shock, brother died), 27, 26
184	26	None	Healthy	Massachusetts	31, 33, 27, 30, 31, 31, 32
185	36	4	Healthy	Mexico	Birth, 34, 29, 30, 24, 25, 28, 25, 28
186	28	1	Healthy	Massachusetts	27, 28, 27, 26, 26, 29, 27, 28, 26, 30
187	22	None	Healthy	Colorado	33, 30, 35, 31, 31, 31, 31, 34, 31
188	34	5	Healthy	Illinois	26, 26, 26, 28, 25, 27
189	28	None	Healthy	Massachusetts	26, 27, 25, 28, 28, 26, 25, 27
190	34	?	Healthy	Michigan	27, 25, birth, 27, 30, 26
191	35	?	Nervous, high strung, healthy..	Ohio	24, 25, 26, 27, 27, 26, 22 (fright), 26, 32, 28, 28, 28, 25, 29
192	30	1	Healthy	West Virginia	24, 26, 26, 24, 26, 25, 26, 26, 26, 28
193	28	?	Very nervous, otherwise healthy	Ohio	Birth, 47, 31, 28, 27, 28, 31, 27, 26, 26, 28
194	35	?	Healthy	Wisconsin	Miscarriage, 29, 24, 26, 25, 25, 25, 25, 25
195	33	3	Healthy	Pennsylvania	27, 29, 27, 27, 27, 23 (physical strain), 26, 26, 28, 27, 29, 28, 27, 28, 28, 30, 28
196	37	4	Pyelitis	New Jersey	Birth, 36, 25, 33, 26, 31, 27, 30, 33, 34, 34, 30, 31, 28, 31
197	27	None	Healthy	Missouri	29, 21 (malaria), 28, 23, 26, 28, 25, 26, 24, 24, 28, 24, 25
198	34	4	Healthy	Pennsylvania	30, 32, 32, 29, 28, 29, 29, 31, 30
199	?	?	? (physician)	Illinois	27, 25, 26, 26, 27, 26, 25, 27, 27
200	27	None	Healthy	Nebraska	33, 30, 34, 27, 28, 31, 31, 33, 23 (pleurisy), 34, 32, 31
201	22	None	Healthy	Indiana	26, 26, 25, 24, 24, 25, 23, 28, 26

Patient 168 menstruated regularly between twenty-eight and thirty-three days. The only twenty-five day cycle was caused by a mental shock (engagement broken). Patient 176 shows a regular menstrual cycle varying between thirty and thirty-three days. The thirty-eight day cycle was caused by shock occurring on the twenty-ninth day of the cycle (favorite aunt fell out of window and died). In case 183, a woman with a twenty-four to thirty day cycle, the fifty-one day cycle was caused by the death of a brother. The names of the states have been inserted to give possible influences due to altitude or climate. In table 1, disturbances of cycles are marked as such whenever the apparent cause could be determined.

TABLE 2.—*Summary of Variations*

1% of these women vary 2 days	11% of these women vary 8 days
11% of these women vary 3 days	4% of these women vary 9 days
22% of these women vary 4 days	2% of these women vary 10 days
14% of these women vary 5 days	1% of these women vary 11 days
19% of these women vary 6 days	1% of these women vary 12 days
14% of these women vary 7 days	1% of these women vary 20 days

PROOF THAT THE OGINO-KNAUS METHOD IS CORRECT AND PRACTICAL

We have succeeded up to the present day in having many couples furnish us an exact record of the first days of menstruations and intercourses covering a period of several months to a year or more. This is facilitated by the distribution of a small record calendar for married people and the request to enter the foregoing data.

Chart 3 shows in a graphic way in the form of a summary the record of 114 women who had 4,702 intercourses during a total of 1,128 months without the occurrence of a pregnancy. The conception period for the given cycles is surrounded by heavy lines and is hatched. This chart also shows in a striking way the short conception periods for short variations of cycles and the long conception periods for long variations of cycles. The data presented, which are additional to the cases reported by de Guchteneere,[9] Holt, Miller,[10] Albrecht [11] and others, show incontestably the value of Ogino's and Knaus's observations.

CONCLUSIONS

1. The menstrual cycles of women are individual and about 90 per cent show a variation of from two to eight days.

2. At least 80 per cent of all women menstruate regularly enough to make use of natural conception control.

9. de Guchteneere, R.: Les variations cycliques de la fécondité feminine, Rev. franç. de gynéc. et d'obst. **28:** 138-157 (March) 1933.

10. Miller, A. G.; Schulz, C. H., and Anderson, D. W.: Conception Period in Normal Adult Women, Surg., Gynec. & Obst. **56:** 1020-1025 (June) 1933.

11. Albrecht, Hans: Zur Frage der periodischen Unfruchtbarkeit des Weibes, München. med. Wchnschr. **80:** 1682 (Oct. 27) 1933.

3. A record of at least eight months is necessary to determine the variation of the menstrual cycle of a woman.

4. The 114 cases quoted with a record of intercourses had in sterile periods are corroborative proof that the Ogino-Knaus method of natural conception is correct.

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THE PRINCIPLES OF THE TREATMENT OF SEPTICEMIA

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The treatment of infection is one of the major subdivisions of surgery, and among all the systems infection of the blood is one of the most serious in its results. For its treatment, new therapeutic agents and methods are constantly being proposed. They spring up to a period of great popularity and then are usually replaced by the next favorite agent. Partly concealed by this procession of panaceas, however, there are certain principles of treatment that have withstood the test of time and others, grounded on the fundamental pathologic processes, that appear most hopeful for

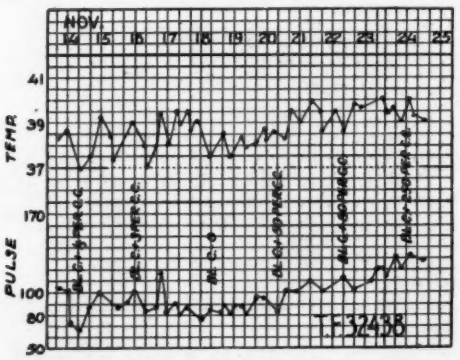

Chart 1.—Streptococcus haemolyticus septicemia arising from carcinoma of the bladder. There was a variation in the number of colonies per cubic centimeter in the early stages of the blood stream infection although there was a steady progression in the later stages.

future progress. In order to analyze these principles of treatment, the cases diagnosed as septicemia during the last nine years in the Strong Memorial Hospital and the Rochester Municipal Hospital, numbering 351, were studied.

At the beginning of this clinical investigation it was decided to accept as bona fide cases of septicemia only those presenting (1) clinically the symptoms of sepsis together with (2) bacteriologically a positive blood culture or, in a few cases in lieu of the latter, such definite evidence of its presence at some time as is afforded by diffusely scattered multiple abscesses. In forty of the 351 cases, one or the other of these two criteria was lacking. Consequently on this basis these forty were rejected as uncertain in diagnosis, leaving 311 cases for analysis.

TYPES OF CLINICAL COURSE

An outstanding feature of this series, as it is of any group of septicemia cases, is the extreme variation in behavior from one case to another. Certain definite types of clinical course could be identified. In the first place, there is a rapidly progressive variety. Symptoms may begin explosively or more gradually, but they develop continuously to an alarming condition within a few days. At times they change abruptly for the better and the patient recovers. But frequently, in spite of anything that is done, the patient rapidly succumbs. Many of these patients died within forty-eight hours after entering the hospital.

The second type of behavior I designate as the plateau variety. After the period of onset the patients reach a rather stationary level and change but little from day to day. Usually exhibiting a swinging septic temperature curve, they may lose ground slowly, remain practically stationary or show gradual improvement. During this time, metastatic foci may develop slowly one focus after another. Whether the plateau of clinical behavior in this process is level or slopes gradually upward or downward, there is a considerable period of time, often several weeks, during which the forces tending toward recovery on the one hand and toward progression of the infection on the other seem to be nearly balanced. Particularly in this state it seems that a little help given to the natural defenses of the body would decide the issue in favor of recovery.

The third clinical variety is the transient septicemia in which the patient shows the picture of a full-blown infection of a sufficient severity or with certain clinical features to suggest septicemia. Culture of the blood is carried out but, before the report of the organism isolated can be returned, the patient's symptoms have abated and the septicemia is at an end. This type of behavior is particularly frequent in blood stream infection from septic abortion. When the patient is admitted she presents a rather alarming picture of infection and has a positive blood culture, but within two or three days, if the progress is favorable, the symptoms of sepsis have abated. Unfortunately one cannot be certain that this is to be the future course of the infection when it is first seen.

The fourth clinical type is the terminal sepsis occurring in the course of some disease that is generally debilitating or specifically impairs the resistance mechanism. This is exemplified by the final invasion of the blood stream in aplastic anemia and agranulocytosis. This type of septicemia is of little concern in this discussion because its treatment is primarily the therapy of the fundamental disease rather than of the terminal infection.

MECHANISM OF BLOOD INFECTION

I have gone into detail in these types of symptomatic behavior because I feel that a correlation between the clinical syndrome and the intensity of the blood stream infection gives an important clue as to the nature of the process involved in the latter, at least in its early stages.

While many cases showing the rapidly progressive type of reaction have also a paralleling progression in the bacterial count of the circulating blood, even these cases early in the blood stream infection show lack of correlation in these two factors (chart 1). In others the culture is repeatedly negative during a period when the clinical picture is distinctly that of general sepsis with the development of numerous metastatic foci. In fact, any hypothesis that attempts to explain the progression of symptoms in septicemia on the basis of growth of bacteria in the circulating blood is faced with many serious inconsistencies (charts 2 and 3). I am convinced that infection of the blood occurs primarily, in the majority of cases, by way of septic thrombophlebitis,

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

usually in the minute vessels in the infected area but at times located in the large veins. The latter mechanism has long been recognized in involvement of the lateral sinus secondary to mastoiditis. Neuhof [1] has very properly directed attention again to similar infection of the major veins contiguous to abscesses or lymphadenitis of the axilla, groin, neck and other regions. It cannot be categorically stated that infection always reaches the blood stream by involvement of the wall of these lesser or greater vessels. It is my interpretation of the data, however, that this is true in the majority of cases, and probably such foci usually continue to pour infection into the blood over a period of several days. The prompt subsidence of symptoms that may follow the sequestration of such a vascular focus from the circulating blood stream is ample evidence of its significance in continuing the septicemia.

PRINCIPLES OF TREATMENT

Consequently, the first principle in the treatment of septicemia is the eradication of all foci of infection at the earliest feasible moment. The adequate drainage of all collections of pus under pressure is usually as good care as is possible for the vascular bed in the area of primary infection. If phlebitis of one of the

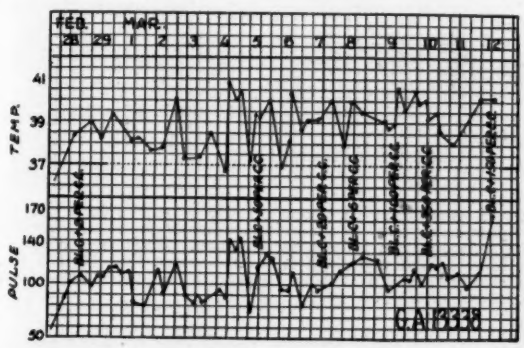

Chart 2.—Pneumococcus (type I) septicemia with acute vegetative endocarditis. There was a progressive drop in the colony count of the blood, (March 5 to March 8) from 50 per cubic centimeter to 6 per cubic centimeter without any corresponding clinical improvement. Also there was a terminal drop in the last two days from 350 to 150 per cubic centimeter on the day of death, associated with a marked progression in symptoms.

major veins is suspected, exploration should be made and, if found, it must be excluded from the circulation by excision or ligation of the vein.

Another adjunct in the treatment that was found helpful in this series and has stood the test of time is the use of blood transfusion to bolster the condition of the patient and particularly to replace destroyed blood in those cases in which anemia has developed. This is so widely accepted now that little need be said in its favor except to warn against the mechanical overloading of the circulation by blood transfusion in the later stages of septicemia or when the cardiac reserve is seriously impaired. It does no good and often hastens the end to give large blood transfusions to moribund septicemic patients. As a supportive measure, however, blood transfusion is of real value.

CHEMOTHERAPY

Ever since Ehrlich's dream of a universal antiseptic that would kill all bacteria without injuring the host, a succession of drugs, dyes and other chemicals have been tried in the treatment of septicemia. There is no *therapia sterilisans magna* available for the cure of septicemia. Colloidal solution of iodine, metaphen, arsphenamine, gentian violet and acriflavine hydrochloride were administered intravenously in this series. They have been the favorites since mercurochrome has been found to be more likely to harm the patient than to do him good. In all, fifteen patients were treated with one or more of these agents. All of the fifteen eventually died. In only one case did it appear from the chart that the chemotherapy had exerted any beneficial effect on the course of the infection (chart 4). Even in this case the symptoms recurred under treatment and the patient succumbed to the infection. I do not believe that the fatal termination in all of this small group means that the chemotherapy was particularly harmful to the patient. There probably is an element of selection of the patient who is progressing unfavorably. But at least in none of these cases did it prove particularly beneficial.

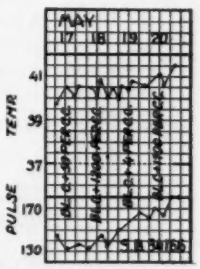

Chart 3. — Streptococcus haemolyticus septicemia arising from acute pharyngitis. Note the drop in the colony count to 4 per cubic centimeter on May 19, with the count 1,200 on the preceding day and 1,700 on the succeeding day (the day of death). The patient was desperately ill on all three days.

If my conception as given for the mechanism by which infection of the blood arises and is maintained is correct, it is easily seen how almost impossible is the task being set for a chemical agent. The organisms that infect the blood stream are sealed away from the generally circulating blood in septic thrombi. To expect the chemical agent to penetrate into such thrombi in sufficient concentration to destroy the bacteria is an extremely rigorous condition. Although I agree with Kolmer [2] that such an agent would be of great therapeutic value, from this study as well as from his report and others in the literature it seems to me that the greatest hope for progress in the treatment of septicemia lies in the immunologic rather than in the chemical approach to the problem.

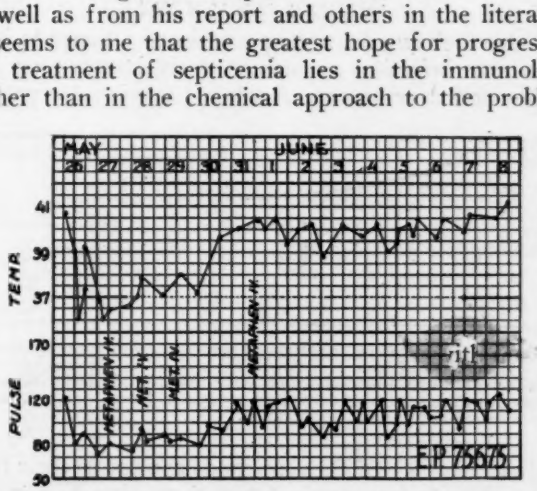

Chart 4.—Streptococcus haemolyticus septicemia, source undetermined. Remission of symptoms coincident with intravenous administration of metaphen (1:1,000). Note, however, that symptoms returned while the chemotherapy was being continued and that the septicemia went on to a fatal termination.

SUBGROUPS

The most important criterion of the effectiveness of a given form of treatment is its gross result; namely, the mortality rate. The mortality rate of the entire series of 311 cases was 74 per cent. However, it is obvious from even a very superficial study of these cases that septicemia is not a unified whole but that certain clinical groups of these cases arising from a common source, with infection by the same organism,

1. Neuhof, H.: Diagnosis and Operative Control of Acute Pyogenic Phlebitis Complicated by General Septic Invasion, Ann. Surg. **97**: 808 (June) 1933.

2. Kolmer, J. A.: Septicemia, Ann. Int. Med. **8**: 612 (Nov.) 1934.

must be used as the basis of comparison in discussing the effectiveness of various therapeutic agents.

Thus, for example, staphylococcic septicemia arising from carbuncle had an extremely serious prognosis with an 86 per cent mortality, while Streptococcus

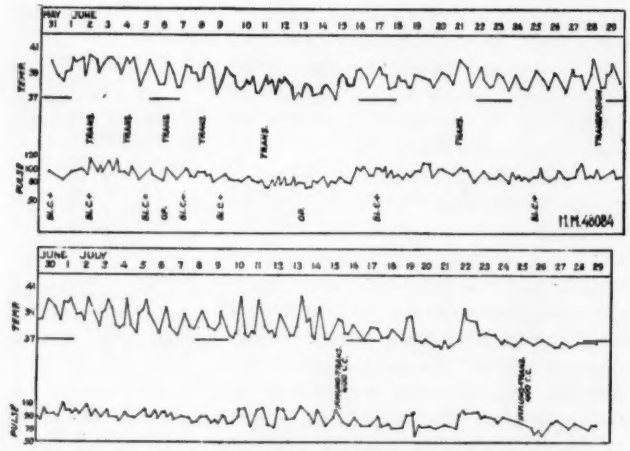

Chart 5.—Streptococcus haemolyticus septicemia arising from axiliary cellulitis. Seven weeks after admission, with the clinical course an established and uniform septic one, immunotransfusion was followed by a spectacular improvement not only in the vital signs but fully as strikingly in the patient's symptoms and feeling.

haemolyticus septicemia of otic origin resulted in more survivals than fatalities. The mortality rate in this group was 49 per cent, though a rate as low as 35 per cent has been reported in the literature. For purposes of comparison, then, in order to evaluate the treatment it is necessary to know the origin of the infection and the type of organism. Tables 1 and 2 give these data for the cases in this series.

IMMUNE TREATMENT

Table 3 shows the agents used in an attempt to influence the infecting organisms with immune or lytic bodies and their results. A total of seventy-one patients

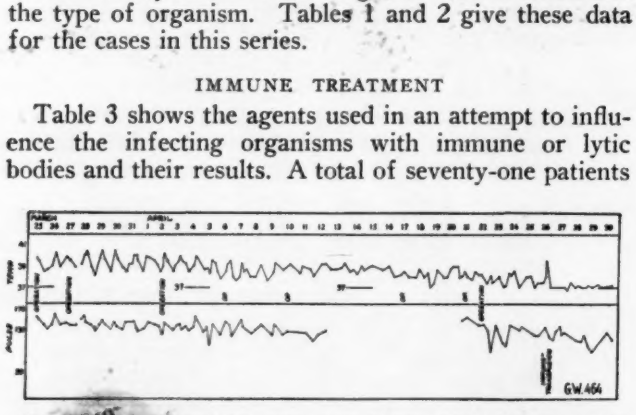

Chart 6.—Streptococcus haemolyticus septicemia with multiple metastatic foci. Immunotransfusion is followed by a drop in the temperature by crisis to normal. Abscesses that were coming regularly before the immunotransfusion ceased developing and one focus that was already beginning receded without suppuration.

had one or more of these methods applied in their treatment; twenty-two survived and forty-nine died, a mortality rate of 69 per cent. However, even in this relatively small group two procedures bear out somewhat the optimism of their sponsors in the literature and suggest their trial in future cases. The administration of bacteriophage [3] was associated with a mortality of 50 per cent in eight cases, most of them of Staphylococcus aureus. The use of immunotransfusion was associated with a fatal termination in only one of five instances. With both of these methods the series of cases are much too small to be significant statistically. Particularly in the case of immunotransfusion, however, there was a striking clinical improvement coincident with the administration of the immune blood in patients having previously had several simple transfusions (charts 5 and 6).

Another advantage of this method is that the immune bodies are present in blood that would be given the patient anyway for its supportive effect. Many reports of individual cases and of short series of patients with septicemia treated by immunotransfusion have appeared in the literature since Wright's [4] original application of this term to a method of in vitro vaccination of the blood with nonspecific organisms, which he proposed in 1919. Subsequently the use of specifically immunized donors has been advocated, Vivian [5] and Unger [6] being among the earliest in this country to practice this method. My associates and I have not used the nonspecific type of immune body response but have felt that the passive transfer of specific protective sub-

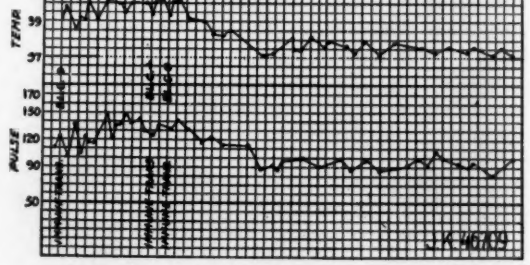

Chart 7.—Streptococcic septicemia following scarlet fever and mastoiditis. Innumerable colonies per cubic centimeter were present on May 4, and the patient was in a desperate condition. Blood from a convalescent scarlet fever patient was given to the patient on that day and the next. This was followed by a striking improvement in the patient's condition, with eventual recovery.

stances should theoretically be of much more value. In our cases the donor was injected daily with increasing amounts of vaccine, made from the organism isolated from the patient's blood stream. The immunotransfusion was 400 or 500 cc. of blood first given about eight days after immunization of the donor was started. The chief objection to the method is that it requires at

TABLE 1.—*Causes of Septicemia*

	Total 311	Dead 231	Well 80-26%
Pneumonia	45	38	7
Other lung infections	3	2	1
Infections of upper respiratory tract	35	21	14
Infections of genito-urinary tract	37	21	16
Uterine infections	22	12	10
Peritonitis	4	4	0
Carbuncle	22	19	3
Skin infections, burns, gangrene, and infected wounds	13	11	2
Cellulitis	13	11	2
Septic arthritis	9	5	4
Osteomyelitis	12	7	5
Scarlet fever	29	22	7
Measles	11	8	3
Erysipelas	8	6	2
Chickenpox	2	1	1
Heart disease and bacterial endocarditis	16	16	0
Aplastic anemia, leukemia and agranulocytosis	10	10	0
Gastro-intestinal and biliary infection	6	5	1
Meningococcus	4	4	0
Miscellaneous	3	2	1
Sources unknown	7	6	1

3. MacNeal, W. J.: Specific Treatment of Septicemia Particularly with Aid of Bacteriophages, Am. J. M. Sc. **187**: 623 (May) 1934. MacNeal, W. J., and Frisbee, Frances C.: Bacteriophage as Therapeutic Agent in Staphylococcus Bacteremia, J. A. M. A. **99**: 1150 (Oct. 1) 1932.

4. Wright, A. E.: New Prospects in the Field of Therapeutic Immunization, Lancet **1**: 489 (March 29) 1919.

5. Vivian, C. S.: Treatment of Streptococcus Septicemia Complicated by Wound Diphtheria, Making Use of Transfusion of Blood Immune to Streptococcus, Ann. Surg. **69**: 437 (April) 1919.

6. Unger, L. J.: Transfusion from Immunized Donors, Laryngoscope **33**: 145 (Feb.) 1923.

least ten to fourteen days to develop immune bodies in this manner in the donor. This time factor is a serious limitation, as the issue is often decided in the early days. We have started to immunize donors in a number of instances only to have the patient die before a specific immunotransfusion could be given.

In certain situations, such as in desperate septicemia complicating scarlet fever, we have employed transfusion from a recovered patient in the hope that

TABLE 2.—*Organisms Causing Septicemia*

	Total	Dead	Well
Streptococcus haemolyticus	114	72	42
Streptococcus nonhaemolyticus	10	7	3
Staphylococcus aureus	60	49	11
Staphylococcus albus	19	14	5
Pneumococcus	54	48	6
Bacillus coli	19	9	10
Bacillus proteus	5	3	2
Bacillus influenzae	2	1	1
Meningococcus	4	4	0
Miscellaneous	3	2	1

immune bodies in the convalescent serum might be of benefit. Chart 7 shows an apparently striking result with this method. In other cases it failed to save critically ill patients. It is worth a trial, however. Our experience with the commercially prepared antibacterial serums for the pyogenic group has been disappointing. Probably not enough strains of the septicemia-producing organisms are used. Also it should be shown by test that immune bodies are present in the serum for the organism isolated from the patient's blood.

Cadham [7] has developed a method that combines the giving of specific immune bodies with nonspecific agents, such as the complement found in normal serum. He has available a colony of rabbits immunized against about fifty strains of streptococci and staphylococci isolated from the blood of patients with septicemia. As quickly as the organism can be isolated from the patient's blood in a new case of septicemia a vaccine is made from it, which is then injected intravenously into the rabbits. This is presumed to cause an outpouring into the blood stream of immune bodies previously attached to the cells in the fixed tissue and consequently to give a very high titer in the serum for the specific organism

TABLE 3.—*Serum Therapy*

	Total 71	Dead 49	Well 22-31%
Pneumococcus serum	7	6	1
Convalescent pneumonia transfusion	1	1	0
Diphtheria antitoxin	2	1	1
Antimeningococcus serum	1	1	0
Antistreptococcus serum	18	13	5
Antistaphylococcus serum	7	6	1
Antiscarlet fever serum	8	7	1
Convalescent scarlet fever blood	5	4	1
Erysipelas antitoxin	7	4	3
Convalescent erysipelas blood	1	1	0
Convalescent chickenpox serum	1	0	1
Bacteriophage	8	4	4
Immunotransfusion	5	1	4

used. In order to make these immune bodies effective, complement is given the patient in the form of normal human serum. In this way the patient receives specific antibodies within three to five days from the time when septicemia was suspected. Undoubtedly this relatively early administration of a specific immune serum contributes largely to the excellent results reported, a total mortality of 15 per cent in a series of 100 consecutive cases of streptococcic and stapylococcic septicemia.

7. Cadham, F. T.: Some Immunological Problems in Septicemia, Canad. M. A. J. **24**: 219 (Feb.) 1931; Septicemia—Method of Treatment; Report of 100 Cases, Am. J. M. Sc. **188**: 542 (Oct.) 1934.

SUMMARY

The most important principle in the treatment of septicemia is the eradication or exclusion from the circulation of all foci that are reinfecting the blood. Transfusion as a supporting measure is also useful. None of the chemotherapeutic agents in common use have been found of great value. The development of immune serums specific for the patient's organism and available early in the course of the septicemia is the most hopeful line of progress at present. I would suggest that a committee from the American Medical Association and the Canadian Medical Association be appointed to study this complicated problem.

Strong Memorial Hospital.

ABSTRACT OF DISCUSSION

DR. GEORGE A. RAMSAY, London, Ont.: In the case of chronic staphylococcic osteomyelitis and also of blood stream infection that has become less acute, it is at that point that the value of the toxoid predominates. In the surgical division of Western University and at the Children's Hospital we ran into some difficulties if we used it until we were perfectly certain that we had a reasonably clear blood stream. We have found that the toxoid has been of value in improving the caliber of donors for blood transfusion. That is to say, we agree with Dr. Scott that it is not possible to treat rapidly the blood stream of the ordinary donor to make an "immune" transfusion. We have a number of donors who have had osteomyelitis, been treated by toxoid and returned to the hospital as donors. As yet there is no standard by which to estimate their value.

DEPRESSION AS A PART OF A LIFE EXPERIENCE

A STUDY OF FORTY CONSECUTIVE CASES

NIELS L. ANTHONISEN, M.D.
WAVERLY, MASS.

The older, rigid formulation of the manic depressive psychosis as being an exclusively constitutionally determined mental disease has, in the course of time, changed into a more plastic one. Room has been given for consideration of the importance of life experiences, and the psychotic episodes, the milder types at least, are no longer regarded as accidental occurrences, independent of situational circumstances. It was my endeavor in the present investigation based on hospital material to find out to what extent psychologic conditioning as well as precipitating factors could be traced through the psychoses. Forty consecutive patients with depressions, thirteen men and twenty-seven women, all under the age of 50, were studied. Several of the patients had had attacks before, and an attempt was made to bring those attacks also inside the sphere of the investigation. Some had had manic attacks and some had them afterward. Those episodes were not included, though at times they shed interesting light on the depressive episode.

The study fell naturally into three parts: (1) a study of the prepsychotic personality, (2) the etiology of the depression in terms of more topical predisposing factors and (3) the course of the illness.

The information given concerning the prepsychotic personality of the patients indicated that thirty-one had had difficulties in socialization due to sensitiveness, shyness and awkwardness, at times coupled with

From the McLean Hospital.
Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

irritability, intolerance and aggressiveness. The latter characteristics might be so outstanding that the fundamental sensitiveness was hardly noticeable. As a consequence of the mentioned reaction tendencies, relatively few had close friends and some had practically no associates outside the narrow family circle. Some were said to be good mixers but were nevertheless inclined to feel lonely and unpopular and were very much dependent on favorable circumstances.

One patient was sociable but overanxious to please all people, and two other patients were regarded as sociable but extremely egotistical and indulged.

The difficulties of these thirty-four patients were reflected in their activities. More than a third were tied to the narrowest environment, though some of them made more or less erratic attempts at gaining a foothold in work or a hobby. The rest of the patients made sincere attempts at creating and maintaining a position for themselves. A number of these gave evidence of being under considerable strain, and changes of circumstances brought out promptly their feeling of frustration and their lack of self reliance. Only relatively few seemed to have entered into and maintained themselves in their occupation with a show of ease and security. In one case a never satiated appetite for broader fields finally overwhelmed the patient.

It is traditional to consider "spontaneous" mood swings as being characteristic of the manic depressive psychosis. In only one case was it stated by one of the relatives that the patient had been happy or depressed "without reason." The subsequent history from the patient himself tended to disqualify the statement, as he felt that his mood swings had been dependent on events of encouraging or discouraging nature. Four patients showed a tendency to protracted depressed moods: One who was said to have "a tendency to gloominess" showed a normally hopeful and happy mood when he was relieved of certain responsibilities during his hospital stay. Another was said to be depressed "normally" yet "was happy when some one made love to her." About the third patient, it was said that "he was seldom cheerful and became depressed when the crops failed." The fourth patient, of whom it was said that she had shown trends of gloominess in childhood, gave objective and subjective evidence that success was accompanied by happy feelings, though she easily became depressed again.

It seems more correct to regard such types of patients as extraordinarily susceptible to depressive reactions, so much so that life only occasionally holds encouraging and hopeful experiences, rather than to consider them constitutionally and unconditionally depressed.

In nineteen more cases, information was given pointing to depressive tendencies ranging from "inclination to be dissatisfied" or to "feel inferior" or to "worry" to more definite alternations of happiness and depression according to changing circumstances. In some cases these alternations were of a rather violent nature.

The depressive tendencies were all found in patients who had shown difficulties in socialization.

The question arises then What connection is there between the frequent occurrence of anxiety (sensitiveness) and the depressive tendencies? In the milder cases ("feeling of inferiority, tendency to worry") the feeling tone is so pervaded by the fear quality that the depressive quality escapes immediate recognition. It seems, however, that the depressive mood has its inception with the anxiety and tends to protract and emphasize it. In the group in which the mood of depression is more evident and sets in more acutely, the sentiment has changed into one of more finality; namely, toward the fulfilment of what was feared.

It may be said that, of the forty cases, thirty-four had shown more or less definite evidence of poor social adjustment, though only a relatively small number could be regarded as borderline.

The information received concerning the six remaining patients indicated that in their setting of life they had enjoyed a satisfactory adjustment. It was only their psychoses that brought out their narrow margin of adjustment and dependence on certain conditions. With these changed, a few of them had difficulties in regaining even a tolerable adjustment.

While I have thus given a sketch of certain handicapping traits of the patients, little knowledge was gained as to the influences that had helped to bring out these traits. The description of the parents in a crude way gives a suggestion of some influences of importance. Ten of the patients had one parent who had shown definite depressive features. In seventeen more cases, one or both parents were characterized as nervous, high strung, intolerant, domineering or easily hurt. In the rest of the cases the characterizations of the parents frequently indicated that there may have been more hardships to put up with than were stated to the examiner.

In studying the more immediate factors with a bearing on the depression partly preparing the ground for it, partly precipitating it, some might be listed as accidental. Far more frequently could it be seen, however, that the traumatic circumstances would not have developed if the personality had not invited the development. A woman, aged 32, may serve as a simple illustration. She had always been concerned about her "background." Her parents were immigrant peasants who had the characteristics found in this group of people. She married into a snobbish and arrogant, but poor family, a relative of which was titled. One sees here the conditioning setting in which the depression developed.

In only two cases out of forty was it not possible to point to significant etiologic factors of the depression, besides the personality factor. One of these patients simply refused to give information. The other patient was vague and hesitant and in both cases objective information was lacking. In some cases the attack could be considered the climax of a long standing maladjustment in which the precipitating factor represented the drop that made the water overflow and necessitated the hospitalization. In others in which the patients had seemed relatively well adjusted, the cause seemed obscure and unreal. Thus, in one case the depression occurred after the death of an aunt to whom the patient, a woman, aged 39, had not been particularly close. Further study showed, however, that the patient had not carried out her deceased mother's will with regard to this aunt, which brought to her consciousness other "sinful" and "immoral" episodes in her earlier life. In the greater number of cases the situational factors were of more dramatic nature, such as impending financial disaster, frustrated love affairs, fear of being dishonored, pregnancy and childbirth. It is of special interest that in none of the seven cases of "puerperal psychoses" could the depression be primarily attributed to the physiologic changes but rather to psychologic circumstances such as increased strain in the family or guilt feeling for harboring hatred toward the infant.

In a considerable number of cases, excluding the puerperal cases, physical illness entered in as a complication. In some the etiologic connection with the depression was entirely remote; in others it seems that the illness aggravated the strain under which the patients were laboring. In two cases the physical illness seems to have been only of symbolic significance.

The "motifs" of the precipitating factors represented in the main complaints could be followed more or less clearly through the illness in twenty-seven of the forty cases. In the remaining thirteen cases the meaning of the complaints was less understandable, apparently arising largely out of the poor rapport that had been established with the patients. From a symptomatologic point of view and with regard to the outcome, they do not differ from the group of twenty-seven. It is only the latter group that will be considered in the following.

The complaint would give itself direct expression, or indirect, by substitution. For instance, one patient presented hypochondriacal complaints, which disappeared rapidly when her difficult home situation was discussed. In three cases the immediate complaint presented might be metaphorical or symbolic and delusional. In the course of the interview the distortions might be dropped and resumed again after the interview until a definite improvement had set in.

Of particular interest was the study of the frequently occurring self depreciation and self condemnation. In all the cases in which they occurred (twenty-four) it could be ascertained that they referred to realities of the patients' lives and represented a formulation of the patients' official and at times sincere evaluation of the inefficiencies or "depravities" that had been in part conducive to their miserable situations. In a few cases the self accusations could just as well be applied to another person of importance to the patient. And the self accusations and self condemnations were regularly balanced by condemnations of others. This might come out directly, but at times in such a subtle form that the patient was hardly aware of it himself, or it would be revealed only after deeper rapport had been established with the physician. In certain cases it was just this hatred against which the self condemnation was directed.

The complaints were accordingly an estimation of the situation in which the patients found themselves with regard to their relations to other people, their capacities and worthiness, their failures and outlook. The variety of complaints thus not only gave expression to depressed moods but also indicated the resourcefulness of the various patients. The latter was given its test in the way the patients dealt with their difficulties.

In a few cases their problems were actually solved with the hospitalization, as burdensome responsibility was thereby removed automatically. These patients, finding themselves in a more favorable position, recovered almost immediately. Some patients recovered relatively promptly from the depression and made a more or less satisfactory adjustment to the hospital, though they were unable to cope with the outside situation and therefore continued their hospital stay unless a radical change took place in the environment. Others remained in a gloomy or agitated mood for months or even years until the outside circumstances changed or until the patients, supported by the physician, were able to change their attitudes. A few patients of this group were unable to reconcile themselves to their fate, though a measure of relief was gained in the course of time. One patient took her problems entirely in her own hands and found a solution, though of a rather illusory nature, as later events showed. Another gave an interesting demonstration of different healing processes at work. After having gone through a severe orgy of self punishment, during the time of which she also discussed her problems at some length with her physician, she suddenly "repressed" all that had taken place and accepted the assistance of a social worker.

In all the cases, twenty-three in number, in which considerable improvement, a comfortable hospital adjustment or recovery occurred, important changes took place in the relationship between the patient and the environment. In none of these cases was there a "spontaneous" improvement, if by "spontaneity" one means an improvement without fulfilment of a certain need of the patient; that is, without a new outlook. A new outlook was brought about either by change in the situation or by an alteration of the patient's own attitude, compared with his prepsychotic attitude. The former was demonstrated time and again by the improvement following such changes as reconciliation between husband and wife or reformulation of future plans, partly instigated by the physician, or a financial rescue by a friend. The latter was shown in cases in which the patient recovered after having gained insight into and reconciled himself to his primitive drives.

In the four unimproved cases and in part in those who made a hospital adjustment there was an incapacity to utilize the opportunities of environmental changes or to change their attitudes to the unchanged environment. This was not due to the depressed mood as such but to the personality makeup of the individual.

There was thus a correspondence between prepsychotic personality, the nature of the precipitating factors of the psychosis and the outcome. Character traits, such as flexibility or rigidness, docility or demanding aggressiveness, insecurity or relative self-sufficiency, were reflected in the psychosis and determined, in conjunction with the therapeutic resources, the duration and final outcome.

CONCLUSION

It can thus be said that the study gave no evidence on the basis of which one could differentiate between depressions that occurred on a physiologic basis and depressions that occurred on a psychologic basis. It could be demonstrated in practically all of them that they occurred as response to psychologic events. In the twenty-seven of the forty patients who lent themselves to a relatively conclusive study, the course and the outcome of the depression were primarily dependent on the resourcefulness of the personality and the therapeutic possibilities. The depression might consequently be considered an attitude to a certain set of events and circumstances rather than an expression of a physiologic occurrence. There was no symptomatologic characteristic of the remaining thirteen cases which would indicate that they were of a principally different nature.

ABSTRACT OF DISCUSSION

DR. EARL D. BOND, Philadelphia: Dr. Anthonisen described recovery following improvement in outside circumstances in many of his cases. Dr. Hunt describes the same thing in cases midway between manic-depressive and schizophrenic psychoses. Evidence to this effect makes for more systematic and enthusiastic therapeutic attempts. On the other hand, there is much

experience to show that most depressions run their courses as self-limiting diseases, and there is much reason to suspect that it is difficult to get together a series of depressions that everybody would agree were manic-depressive. Having just examined 600 patients, I find examples on both sides of this proposition. Some patients have broken down when everything seemed in their favor; others have recovered when everything seemed against them. I suppose the easiest explanation for some of these apparent inconsistencies is to suppose that there are multiple instead of single causes at work. I will give two illustrations which support Dr. Anthonisen's conclusions. One was a woman who had been in a severe depression for eleven years. She recovered promptly after the death of a much older and extremely cantankerous husband. A man, seclusive and conscientious, married at 19 a wife who was pleasant and uncritical and kept him in a good social setting. Even though he had a depression at 39 he was able to keep on at work, and he recovered with his wife's help. At 48 the wife died, and at 49 he married again. The second wife expected her husband to dance attendance on her. She had an operation which brought her to the hospital. She leaned on him with considerable criticism. The patient broke down again into a depression, and this time he has remained in it for five years without any sign of recovery.

DR. LLOYD H. ZIEGLER, Albany, N. Y.: There are numerous disharmonies in nature that render an organism more or less functionless in the full biologic sense. The mule is sterile and not self-perpetuating, a victim of a biologic pitfall. The sensitive person, unable to socialize, fosters the creation for himself of restricted environment that engenders a lack of flexibility. Sooner or later this combination must confront a new situation, the modification of which is dependent not so much on how the environment can be changed as on a deep and often unpleasant experience in the individual. The modifiability of such disharmonies is itself the very basis of prognosis and treatment. Dr. Anthonisen's contention that environmental factors have more etiologic significance in the production of depressions than older formulations postulated is substantiated in the history of a married woman, aged 49, one of identical or monozygotic twins, who at 39 had a severe depression, with exhaustion lasting a year, after the death of her only child, a daughter of 19. On recovery she was her normal, cheerful, energetic self. At 48 she suffered a similar attack after a shock less tragic than that of the death of her daughter. On the other hand, her twin sister, with whom she often visits, has remained well despite the loss of her only child a week after delivery. A schizophrenic brother has been in a state hospital many years. A younger sister is entirely well. Such histories emphasize particularly the need for a broad view of human life as a growth, not entirely predetermined by heritage but affording elements that may be disorganized or disharmonized by some of the less friendly circumstances of time and place. Dr. Anthonisen's paper deserves careful study by those who wish to immerse themselves in some of the life problems of patients suffering from depression.

DR. NIELS L. ANTHONISEN, Belmont, Mass.: I have for years been much interested in the problem of manic-depressive psychosis as a spontaneous and a self-limiting disease. The more experience I have gained the more I have become convinced of the significance of situational circumstances in the chain of the causal events; but, of course, I cannot say that all cases of manic-depressive psychosis are precipitated by psychologic factors. Many times patients are admitted to the hospital about whom the relatives have no information to offer, and it also happens frequently that one may study a case for a considerable length of time before one is able to find out what the psychologic factors are. Little by little the facts may come out, and as a result the patient may get an entirely new attitude toward life. That kind of case does not disprove what Dr. Bond said, but it does indicate at least that one should not be satisfied with negative information from the side of the relatives or even with the information that the patients might be able to give on one's immediate inquiry, but that a very thorough study is necessary before one is justified in drawing conclusions.

CONGENITAL ATROPHY OF THE SKIN, WITH RETICULAR PIGMENTATION*

REPORT OF TWO CASES

M. F. ENGMAN JR., M.D.
ST. LOUIS

In 1926 M. F. Engman Sr.[1] presented before the Chicago Dermatological Society a case of reticular pigmentation of the skin with atrophy. In his description of the case he remarked that the brother of this patient also suffered, but to a lesser degree, from the same condition. These patients have continued under our observation and have submitted to certain studies, which are reported here.

REPORT OF CASES

CASE 1.—*History.*—C. L. is a white man now 32 years of age. His parents are fair-skinned Americans of Anglo-Saxon descent. As a baby the patient was frail and weak. At 3 months he had attained his birth weight. As a child he was delicate, of sallow complexion, and a poor eater. Otherwise, however, he was normal.

At the age of 8 years there appeared on the tongue and buccal mucosa small ulcerations and leukoplakia-like lesions, which would not heal. They seemed to have appeared as a result of sharp teeth cutting the tongue and cheek. Some of the ulcers were five years in healing.

When the patient was 12 years old the family first noticed that his skin was darkening, especially over the face, neck, forearms and legs. The darkening process became general and the color gradually deeper up to 18 years of age, at which time it had reached about its present appearance.

The nails of the fingers and toes also began to show changes at about the same time the dark color began to appear. The nails of the fingers became rough and dry. Large pieces would break off. At the same time there was inflammation or infection under the toe nails from time to time, and the same dystrophic changes occurred. In the course of the next few years he lost all his nails permanently.

There is no history of any similar condition in any other member of his family except in his younger brother (case 2).

Dr. Engman Sr. first saw this patient in 1913, when the boy was 10 years old. He did not see him again until he was 22, at which time his present condition had fully developed. The patient entered Barnes Hospital, where he was carefully studied. Every phase of his general health was investigated, but nothing especially abnormal was found other than very marked dental caries. Melanin was not found spectroscopically in either his blood serum or his urine.

Examination.—The appearance of the patient at present is striking (fig. 1). In general there seems to be nothing abnormal about him except what is referable to the skin and its appendages. The man is of medium height, slender but not emaciated. His hair is thin and lusterless. The scalp is dry and slightly coated with a branny scale. His face is somewhat sharp and "pinched," such as one sees in certain forms of scleroderma. There are no eyelashes. The eyelids are slightly everted, giving an inflamed appearance to the eyes, which otherwise seem to be normal. The lips are dry and scaly.

The mouth itself shows much change. The mucous membrane is slightly bluish from an increase in pigmentation. There are areas of leukoplakia-like lesions on the buccal mucous membrane, the gums and the tongue. Small whitish ulcerated areas appear from time to time and disappear slowly. He has lost all his teeth.

The skin of the face and neck is pigmented in the same manner as the rest of his body, but, being exposed parts, light and weather have produced some difference in appearance. Here the reticular formation is hardly apparent. The skin is dry, slightly scaly, very dark and rather reddish. The forearms and backs of the hands have the same appearance.

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* Read before the Section on Dermatology and Syphilology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1. Engman, M. F.: A Unique Case of Reticular Pigmentation of the Skin with Atrophy, Arch. Dermat. & Syph. **13**: 685 (May) 1926.

The nails have disappeared from the fingers and toes. Except for the skin changes, the extremities are normal.

Over the entire body, especially over the covered portions, there is a lacework distribution of pigment, forming millimeter octagons of white skin surrounded by narrow bands of gun metal blue-black. Scattered over the entire body are larger white areas a centimeter or so in diameter that seem as if a number of these tiny white octagons have coalesced. These white spots have been gradually increasing in number and size as the years go by (fig. 2).

Fig. 1 (case 1).—Distribution of lesions.

Dr. John R. Caulk examined the urethra and bladder cystoscopically in November 1933. He reported that the mucous membrane of the urinary tract was entirely normal except that at the mucocutaneous junction of the meatus there was an erosion similar to the lesions in the mouth.

Mentally this patient is alert and above the average in intelligence.

Microscopic Study.—A small area of skin for biopsy was taken from the side of the back. Several of the small white octagons surrounded by the lacework bands of pigment were included. The biopsy was performed by Dr. Louis H. Jorstad, who remarked on the toughness of the skin and the difficulty of cutting through it. Part of the biopsy was immediately prepared for the dopa reaction, part for special staining, and part for serial sections stained with hematoxylin and eosin.

Routine Sections: The epithelium (fig. 3) in general was quite thinned and flat under low power. There was no papillary configuration. Under high power the epithelium was from three to five cells in thickness and there seemed to be just a suggestion of rete pegs here and there. The cornified layer was relatively increased in thickness. Otherwise the epithelium showed nothing remarkable. The cutis was noteworthy in that there was a marked increase in the collagen. The papillae were obliterated and there was a general hypertrophy and hyperplasia of the fibrous elements.

The sweat glands seemed to be slightly atrophic. No sebaceous glands were seen in any of the sections studied. No edema or inflammatory infiltration was observed. The elastic tissue was decreased in amount and considerably broken up and shredded.

Pigment was present in the basal layer of the epithelium but not to any marked degree in the hematoxylin-eosin stained sections. In the upper cutis just below the epithelium there were very large clumps of pigment with smaller deposits of pigment intervening. In serial sections these clumps continued through many sections and appeared to be the bands seen clinically.

Serial sections showed no apparent relation of these bands with any normal skin structures. The follicles were sometimes included in the pigment clumps and sometimes not. This pigment was shown to be non-iron bearing by the potassium ferrocyanide reaction. We believe it to be melanin. In these hematoxylin-eosin stained serial sections the pigment appeared as large, well defined groups of coarse brown granules, apparently contained within mature fibrous cells.

Dopa Reaction: Frozen sections were prepared according to Blackberg's [2] technic for the dopa reaction, except that after the completion of the reaction the sections were passed rapidly through 95 per cent alcohol and absolute alcohol, cleared in xylene and mounted in gum dammar for permanent sections (figs. 4 and 5).

There was a marked increase in widely branching dendritic cells all through the basal layer. This was especially true in areas in which the rete was thicker. Intervening areas of this epithelium showed some dendritic cells, but they were not as numerous. There seemed to be no relation between the clumps of dermal pigment and the areas of more numerous dopa positive dendritic cells. In fact, the dermal pigment more often appeared when there were fewer dendritic cells.

Silver nitrate sections showed fine granular pigment present in the basal layer to a very marked degree. The phenomenon of "capping," in which the pigment granules are collected in a semicircle distal to the nucleus, was the usual finding. There were large clumps of subepithelial pigment, which usually did not underly the most heavily pigmented basal cells.

Neither the dopa nor the silver nitrate sections seemed to throw any light on the anatomy of the clinical lacework pattern. Well marked bands with intervening unpigmented areas were not strikingly noticeable enough to imply that the bands observed clinically were in the basal layer.

CASE 2.—J. L., a white man, aged 26, is the brother of C. L. (case 1). This patient was not as cooperative as his brother and for that reason was not as thoroughly studied. The case is reported because the condition is in every way identical to that in case 1 except to a lesser degree.

At the age of about 7 years it was noticed that his finger nails and toe nails began to undergo the same sort of atrophic process that his brother's had done at about the same age. Shortly before this, as in his brother's case, leukoplakia-like lesions and small ulcerations developed on the tongue and buccal mucous membrane and were slow in healing.

Fig. 2 (case 1).—Close-up showing pigment lacework.

The darkening of the skin began slowly and indefinitely sometime during early puberty and gradually deepened over a period of years. It has never become blue-black like his brother's, nor has it become so generalized. Otherwise it is the same. There is the same reticular, lacework pattern of pigment bands giving a dark fawn color to the skin. The color is most marked around the neck from the clavicle up over the lower part of the face. There are large colorless areas as in the brother. The forearms, cubital spaces, lower part of the legs, scrotum and penis are pigmented to a mild degree.

2. Blackberg, S. N.: A Simple Technic for the Dioxyphenylalanine Reaction, Arch. Path. **14**:121-123 (July) 1932.

The nails have gone. The skin over the knees and elbows is somewhat dry, scaly and atrophic. The hair is fairly normal. The teeth are carious.

When the patient was 16 years old he entered Barnes Hospital for detailed study, in the service of Dr. M. F. Engman Sr. No abnormalities were found other than those already mentioned. Spectroscopic examination showed no melanin in the blood serum or in the urine.

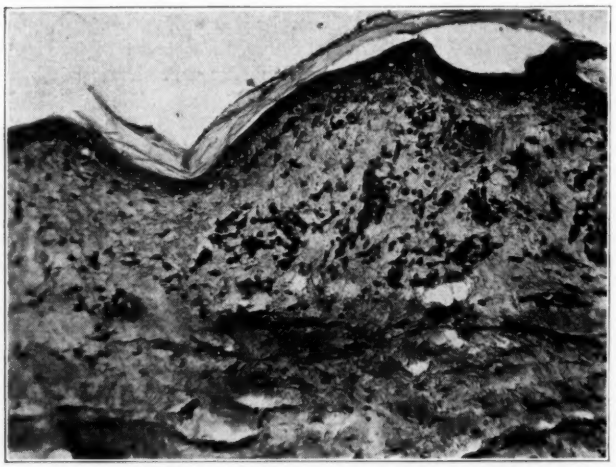

Fig. 3 (case 1).—Routine hematoxylin-eosin stained section of pigment area under low power.

At the age of 21 the patient acquired gonorrhea. A chronic epididymitis developed, which required incision on two occasions.

It was noted at this time that the skin over the body seemed dry and slightly atrophic in appearance.

Two years later the patient was readmitted to Barnes Hospital for a cystitis, which was believed to be tuberculous.

No biopsy of this patient's skin could be obtained, so it can only be assumed that the pathologic picture would be similar to that of his brother's, as are his clinical picture and his history, except that in this case the atrophic and pigmentary process did not progress as far.

COMMENT

Cole, Rauschkolb, and Toomey [3] in 1926 reported a case of congenital dyskeratosis with dystrophy of the nails and leukoplakia of the mouth. Their patient showed some mild pigmentary change mainly about the neck, where there was a peculiar pinhead sized papular eruption. Cole and his collaborators went carefully

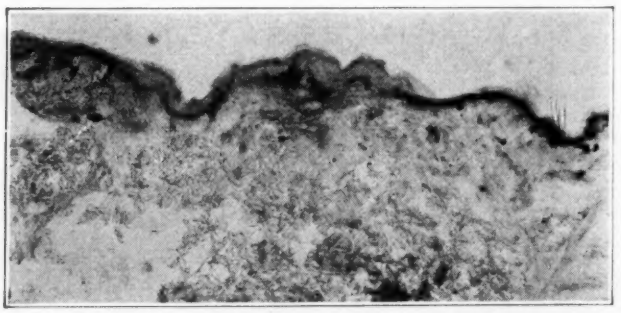

Fig. 4 (case 1).—Dopa section under low power.

into the literature of all conditions reported resembling their case in any way and fully discussed the possibilities of diagnosis. It was their opinion that the patient presented by Engman Sr. at the Chicago Dermatological Society (case 1) was similar to theirs. This is apparently true. However, there are as many differences as there are similarities. Our cases are similar to theirs in that all three present atrophy of epithelial structures—mouth and nails. Atrophic and pigmentary changes in the skin were generalized in one of our cases, less so in our second case, and quite localized in Cole, Rauschkolb and Toomey's case. The pathologic pictures were similar. Clinically the cases seem to be different in the pigment distribution. We were greatly impressed with the netlike character of the pattern in our patient. It is so uniform and so pronounced that we are inclined to consider it as fundamental. Furthermore, the atrophy in case 1 is so generalized as to include all external ectodermal structures except the eyes themselves. There is so little known about such a condition that one cannot afford to be very dogmatic about similarities and differences.

There are a good many different types of atrophic conditions of the skin and of pigmentary changes, some of which are congenital, described in the textbooks and reported in the literature. Cole and his collaborators discussed a good many of these conditions, but since none of them are at all like those presented in our cases it does not seem pertinent to discuss them here.

Fig. 5 (case 1).—Dopa section under high power.

A careful search of the literature has revealed the report of only one other case which resembles ours very closely. This one is more like ours than is Cole's case. Wende and Baukus,[4] in 1919, reported the case of a girl, aged 10 years, who began to become pigmented at 1 year of age. The entire skin became dark, varying in color from bronze to Negro black. There were innumerable white areas varying in size from a millet seed to a lentil. On the anterior aspect of the thighs, groin and lower part of the abdomen there were white macules, some of which were made up of single minute macules, while others, the authors state, were the result of the coalescence of several macules. In excising a small piece of skin for biopsy it was noted that in entering the corium there was a remarkable resistance. This was true also in our case. The histopathologic picture in this case was quite similar to ours, except that epithelial atrophy was not so marked. Wende and Baukus further described in the same article the younger brother of the patient, who suffered from a similar pigmentary disturbance, but to a much less degree. In both of these cases, however, the intensity of pigmentation responded very markedly and in

3. Cole, H. N.; Rauschkolb, J. E., and Toomey, John: Dyskeratosis Congenita with Pigmentation, Dystrophia Unguis and Leukokeratosis Oris, Arch. Dermat. & Syph. **21**: 71-95 (Jan.) 1930.

4. Wende, G. W., and Baukus, H. H.: A Hitherto Undescribed Generalized Pigmentation of the Skin Appearing in Infancy in Brother and Sister, J. Cutan. Dis. **37**: 685-701 (Oct.) 1919.

reverse fashion, as it were, to light (sunlight and artificial light). The more intense the light and the longer the exposure, the less the pigmentation. Such a phenomenon was not present at all in our cases. Careful light tests, even with ultraviolet, were made in case 1. Furthermore, in the cases of Wende and Baukus, there were no clinical atrophic changes in the nails, teeth or mouth.

Thus, I may say of our cases that they belong to a group to which may be added Cole's case and the cases of Wende and Baukus. The group has in common congenital pigmentary changes which may be due to some fundamental ectodermal defect, the etiology and the mechanism of which is not understood. Atrophic tendencies may predominate the picture, as in Cole, Rauschkolb and Toomey's case. Pigmentary disturbance may be present, as in the case of Wende and Baukus, or both may be present to a greater or less degree, as in our cases.

The clinical and histopathologic studies of these cases naturally suggest as a descriptive name for this group congenital atrophy of the skin with reticular pigmentation.

Beaumont Medical Building.

ABSTRACT OF DISCUSSION

DR. H. A. DIXON, Toronto: I think that in the two brothers the condition comes within the group of nevi and possibly within the ichthyosis group. In poikiloderma atrophicans vasculare, telangiectasis is found; later capillary hemorrhage and leukoplakia are common, and not uncommonly rather generalized pruritus. In the early stages there may be edema or eczema of the eyelids. In the melanoderma of Civatte or of Riehl there is pigmentation on the exposed parts, and probably on the exposed parts only. The pigmentation is in the form of a reticulum surrounding rather clear areas; the clear areas correspond to the follicular openings. The changes of the mucous membrane in the melanoderma of Civatte are rather uncommon, and if telangiectasis or atrophy is present it is slight. I think that the patient described by Drs. Cole, Rauschkolb and Toomey is similar to Dr. Engman's patient, and, as they have pointed out, there is a direct relation between the nevi and ichthyosis and all the transitions from a simple hyperkeratosis to a rather extensive papillary hypertrophy may be seen. What the cause of congenital dyskeratosis may be is a difficult question. Bettman reports one instance in which the father and three sons were affected. In a report from the Jadassohn clinic, there is the history of intermarriage. Many of these cases are familial and it is possible that intermarriage plays an important part.

DR. S. WILLIAM BECKER, Chicago: It is possible at the present stage of pigment study to determine the process by a combination of the dopa method, especially the new paraffin modification that was developed in the laboratory where I work, and Masson's trichrome stains. One can state just what is going on in the skin. This does not mean that one can make any decision relative to the causative factors. The fact that in these sections the dopa reaction was most marked in the areas with the smallest amount of dermal pigmentation may simply mean that this must be visualized as a process and not as a series of static pictures. I think that in the regions with the greatest dermal pigmentation the dopa reaction was most positive a few months ago. Although no inflammatory reaction was observed in these patients, I cannot help but think that the condition, as far as the pigmentation is concerned, is due to a subthreshold inflammatory reaction that has been rather irregular and has resulted in retiform pigmentation.

DR. HAROLD N. COLE, Cleveland: After Rauschkolb, Toomey and I showed our case at the October 1925 meeting of the Cleveland Dermatological Society, Dr. Martin F. Engman Sr. presented his case at a meeting of the Chicago Dermatological Society. Drs. Mitchell, Oliver and Senear saw our patient and noticed the close resemblance to the patient of Dr. Engman. Dr. Engman's case would rather make one believe that this is a familial disease; moreover, there have been cases reported in the German literature that would lead to this surmise. Recently Kumer and Loos reported twenty-three cases of this disease in a family of five generations. Some of the cases showed thickening of the fingernails and toenails, symmetrical island-form types of thickening over the soles of the feet, follicular keratoses on other parts of the body and leukokeratoses in the mouth, with formation of white spots on the back of the tongue and inside the corners of the mouth, and even hoarseness due to involvement of the larynx. The disease is a dominant process. The proportion of normal to sick patients is 52 to 23, and of males to females 13 to 10. It seems that this disease is not uncommon in Austria, and it is quite possible that, like other conditions, once it is called to our attention we shall find that it is somewhat more frequently found in our country. It seems to be distinguished by certain characteristics: the cutaneous changes consisting of this peculiar retiform pigmentation, a dyskeratosis, and eventually a certain amount of atrophy. On the mucous membrane there are changes of leukokeratosis, or leukoplakia, and there may be, at times, open lesions that would possibly throw a person off and make him think of moist papules if he were not practiced in dermatology. The nails are much thickened and often assume a more or less conelike shape, and in certain of the cases there is a dystrophy of the nails with even complete absence of certain of the nails. Likewise, the hair and the cornea may be affected. It apparently comes under the heading of ectodermal defects. It is undoubtedly a familial disease, and I believe that it is characteristic enough to be looked on as a distinct entity, and, since Riehl has apparently described this condition before the other designations were given it, it looks to me as though dermatologists should accept the designation of "pachyonychia congenita, typhus Riehl."

DR. FREDERICK D. WEIDMAN, Philadelphia: Our concept of the melanins is changing every day. Many years ago, when I was teaching general pathology, one of the things emphasized about melanin was its insolubility. I think that there is today some chance for question on that point. A number of years ago I reported a case (necropsy) of transverse hyperpigmented lines of the skin of a new-born baby. Now, the application that this experience has to the case here reported is what I take to be on the part of the reporter some discrepancy between the pigmentation which he saw clinically and that which he studied tinctorially and could not quite reconcile with what he saw clinically; that is, a distribution of pigment in the epidermis that he could not quite understand. In the ordinary paraffin sections from my necropsy case I did not find any excess pigment, so I turned to frozen sections and found that it was possible to demonstrate a large amount of pigment in the transverse lines, compared to that present in the normal skin of the baby. I suggest that, whenever these discrepancies in pigmentation between what one sees clinically and what is found in histologic sections, one should check up by employing frozen sections as well as paraffin sections. In that way one avoids the possibility of dissolving out some of the various members of this heterogenous group of the melanins.

DR. CHARLES F. PABST, Brooklyn: Pigmentation is playing an important rôle in the causes of dermatoses. In a visit to the Bahamas General Hospital at Nassau I talked with Dr. Cruikshank and I was surprised to learn that in a population of 65,000 they had only seven deaths from cancer in the entire year, and pigmentation seemed to be an important factor in this low cancer death rate. Dr. Engman has mentioned a disease that is undoubtedly familial. Then the question arises: Is it not racial? If it is racial, what is the reason that certain cells cannot manufacture melanin? No matter how one tries, one cannot make some skin cells manufacture melanin. I am conducting a test with guinea-pigs to represent the different races and families, albinos, blonds and brunettes. Up to the present time the albinos and the so-called blond races represented by these guinea-pigs have been exposed eight hours a day to the intense natural rays of the sun. So far there have been several deaths among the albino and blond guinea-pigs that have little or no pigmentation. The necropsy showed in all these cases a simple acute nephritis. The black pigmented

guinea-pig representing the Negro or the deeply pigmented brunette is living on, although exposed eight hours a day. To augment this effect and to find out whether the pigment was a protection to the organism or not, I rubbed on tar preparations, after shaving the skin of the abdomen, the back and the ears of the black guinea-pig, and, in spite of the application of tar which usually is followed by cancer, this guinea-pig is still living, has no cancer, and shows no ill effects. I should like to ask Dr. Engman whether in his extensive study of pigmentation he has decided that there is any one factor in the cell itself that is responsible for the inability of the cell to manufacture melanin.

DR. M. F. ENGMAN JR., St. Louis: These cases were a difficult study. In preparing this paper I had invaluable help from the various departments of Washington University Medical School and Barnard Free Skin and Cancer Hospital. The questions that arose in our discussions were largely the questions that have arisen here. We did not pretend to understand why in one area pigment would not be manufactured but would in another area. We felt from the clinical and pathologic picture that, as Dr. Becker suggested, there had been pigment manufactured in areas where now there is atrophy and very few dendritic cells. The lines of reticular pigmentation we could not be certain about, but we believed that the pigment was in the upper part of the cutis. The paraffin hematoxylin-eosin stained serial sections were probably twisted and warped sufficiently so that graphs constructed to show the straight lines were useless. I think that was the reason for the discrepancy Dr. Weidman mentioned. It is also quite possible that some of the pigment was dissolved out in fixation. As Dr. Cole mentioned, these cases are similar to the ones he reported. We are still unable to classify this group. The cases reported in the German literature show marked inflammatory changes in the skin which were not present in our cases. We had no evidence of inflammation anywhere except in the nails, which are by now all gone, and in the mouth.

NONOPERATIVE TREATMENT OF INADEQUATE PERIPHERAL DISTRIBUTION OF BLOOD

PASSIVE VASCULAR EXERCISES AND LOCAL HYPERTHERMIA

LOUIS G. HERRMANN, M.D.
CINCINNATI

The seriousness of the sequelae which usually follow the sudden abstraction of the required amount of arterial blood from the tissues of an extremity places the majority of such disturbances in the realm of surgical emergencies. In the past, the sudden occlusion of the major artery of an extremity by embolism, thrombosis or trauma frequently necessitated some major surgical intervention at the site of injury to the artery or, more often, some radical or mutilating surgical operation.

For those patients whose major or secondary arterial pathways were slowly but progressively becoming narrowed, causing a marked deficiency in the peripheral distribution of arterial blood, only the usual palliative measures were employed. There is no doubt that the accepted methods of chemotherapy, physical therapy and surgery have contributed greatly to the comfort of the patients, but the increase in arterial circulation was insufficient in the majority to prevent the appearance of some trophic lesion or influence the severe pain.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

From the Department of Surgery, College of Medicine of the University of Cincinnati, and the Vascular Disease Services of the Cincinnati General Hospital and the Christian R. Holmes Hospital of the University of Cincinnati.

Clinical experience has shown that there are many major factors which influence the peripheral circulation of arterial blood, especially in the distal parts of an extremity; yet in final analysis the pathologic physiology of the peripheral arterial circulation is relatively the same for many of these factors. In general, the peripheral distribution of arterial blood is influenced by:

A. Physical state of the intravascular fluid
   1. Quantity
   2. Pressure
   3. Viscosity
B. Physical state of the peripheral arteries
   1. Abnormal spasm
   2. Rigidity
   3. Compression
   4. Obliteration
C. Physical factors in the environment
   1. Atmospheric pressure
   2. Temperature
   3. Radiation (light)

In clinical practice, therefore, my associates and I have considered that all deficiencies of peripheral arterial circulation can be explained on the basis of some combination of the four major disturbances affecting the physiology of peripheral arteries; namely, major arterial spasm, arteriolar spasm, major arterial occlusion or arteriolar occlusion. Differentiation between these types can be made under controlled conditions of temperature and humidity by oscillometric and calorimetric studies before and after complete vasomotor relaxation (fig. 1).

After an accurate diagnosis of the type of arterial disturbance has been made, the problem of proper therapy becomes paramount. It should be apparent from the foregoing list of factors responsible for the deficiency of peripheral circulation that the vast majority of the disturbances do not present vasospasm as a factor of major importance. For this reason operations on the sympathetic nervous system have a relatively limited field of application in this great group of disturbances

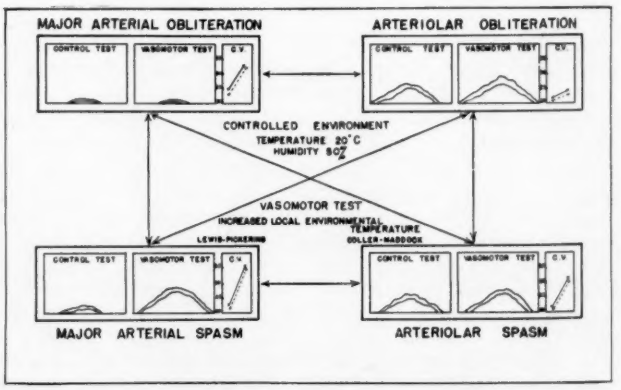

Fig. 1.—Changes in oscillometric and calorimetric readings which characterize the four main types of arterial disturbances responsible for deficiencies of the peripheral distribution of arterial blood. Any combination of these types may be seen in clinical practice.

of peripheral circulation of arterial blood. Paralysis of the vasoconstrictor mechanism with the resulting vasodilatation only favors the formation of a collateral circulation in the same manner as does heat or other forms of radiant energy when applied to an affected extremity.

The treatment of deficiencies of peripheral circulation is extremely difficult and may tax to the utmost the

ingenuity of the physician or the surgeon. In general, it may be said that all therapy for these disturbances should be directed toward

1. Prevention of infection of the poorly nourished tissues.
2. Reestablishment of an adequate collateral arterial circulation.
3. The relief of pain.

The local hygiene of the feet and the prevention of mechanical, chemical and thermal trauma to the parts will aid materially in preventing infection from gaining entrance into the tissues of the affected extremity.

It was the search for a more physiologic means of preventing the serious sequelae of obliterative arterial diseases of the extremities that led me to attempt to stimulate the development of an adequate circulation through the collateral arterial pathways by rhythmically decreasing and increasing the air pressure about the

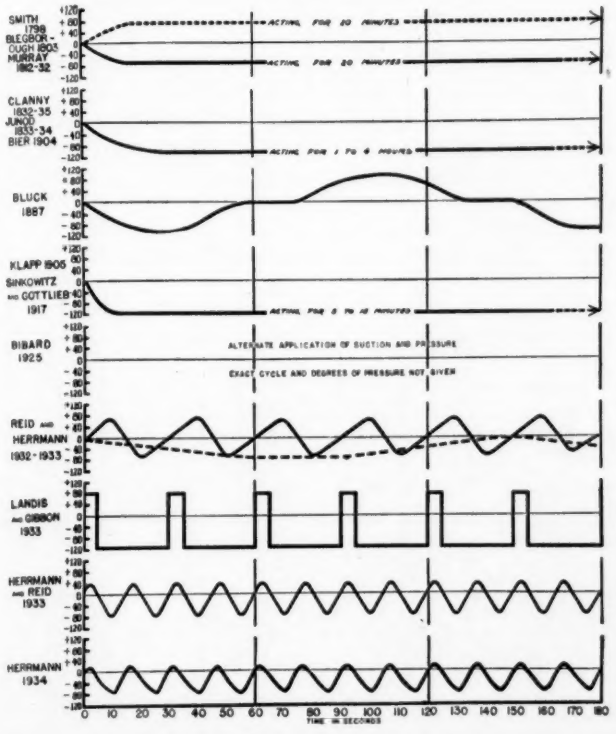

Fig. 2.—Historical review, in chronological order, of the more important types of alterations of environmental pressure used to improve the arterial circulation in an extremity.

affected extremity. The physiologic effect of diminished or increased environmental pressure has been known for centuries and was applied clinically as a means of increasing the circulation in an extremity as long ago as 1803 by Ralph Blegborough [1] of England.

In August 1932 my associates and I began to apply the principle, expounded by Bluck [2] in 1887 and rediscovered by Bibard [3] in 1924, that the alternation of negative and positive pressure about an extremity increased markedly the peripheral circulation of arterial blood. We were interested in using this means for the sole purpose of developing an adequate collateral arterial circulation around diseased or injured arteries.

1. Blegborough, Ralph: Facts and Observations Respecting the Air-Pump Vapour-Bath, London, Lackington, Allen & Co., 1803.
2. Bluck, Edgar: Improved Means or Appliances for Promoting or Modifying the Circulation of the Blood in a Living Body, London, Darling and Sons, 1888.
3. Bibard, René-Auguste: Appareil ventouseur à effets alternants de dépression et de compression, Imprimerie nationale, Paris, April 17, 1925.

Our original treatment unit [4] was so constructed that the change of pressure was brought about slowly; the complete cycle of the variation, from atmospheric pressure to 70 mm. of mercury negative pressure, then to 70 mm. of mercury positive pressure and finally back to atmospheric pressure again, took about thirty seconds. Large amounts of positive pressure were occasionally found to cause secondary thrombosis; con-

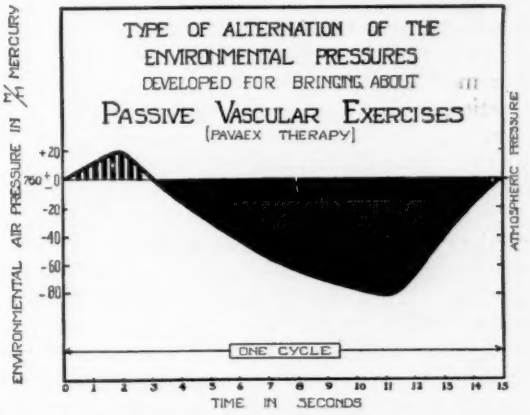

Fig. 3.—Kymographic record of pressure changes characteristic of passive vascular exercise. Note the gradual rise and fall, in cyclic sequence, with the pressure predominantly in the phase below the existing atmospheric pressure.

sequently, the alternation of pressure was kept largely in the phase below the existing atmospheric pressure. It is the intermittent negative pressure environment that actually causes the increase in the arterial circulation in an extremity. In order to prevent venous stasis, it is important that the negative pressure be completely neutralized at the end of each cycle. Consequently, after much experimentation we came to the conclusion that from two to four cycles of alternating pressure

Fig. 4.—The Experimental Pavaex Treatment Unit. The pyrex treatment boot has been elevated several inches above the level of the patient's heart to facilitate the return of venous blood.

from about 80 mm. of mercury negative pressure to 20 mm. of mercury positive pressure will bring about the greatest increase in the arterial circulation. There seems to be no limit to the length of time the treatment can be carried out without discomfort or untoward

4. Herrmann, L. G., and Reid, M. R.: Passive Vascular Exercises: Treatment of Peripheral Obliterative Arterial Diseases by Rhythmic Alternation of Environmental Pressures, Arch. Surg. **29**: 697-704 (Nov.) 1934; The Pavaex (Passive Vascular Exercise) Treatment of Obliterative Arterial Diseases of the Extremities, J. Med. **14**: 524 (Dec.) 1933.

effects. The frequency or length of treatment should depend on the urgency of the condition being treated, as, for instance, acute arterial occlusion by operation, trauma, thrombosis or embolism must be considered as a surgical emergency and treated intensively until adequate circulation has been permanently reestablished. For patients who are hospitalized, the number of hours of actual treatment vary from five to seven each day, while the less urgent and ambulatory patients receive from twelve to twenty hours each week.

In February 1933 Landis and Gibbon [5] suggested still another modification of the original methods of applying suction and pressure to the human extremity to modify the circulation. They suggested on purely physiologic grounds the sudden exchange of extreme degrees of suction and pressure as a means of increasing the flow of blood temporarily through rigid or diseased arteries, in accordance with Poiseuille's law. They confirmed the practical observations of Bluck [2] and Bibard [3] that the circulation was increased by alternate application of suction and pressure to an extremity. Their subject had apparently normal peripheral arteries; consequently their observations in those physiologic experiments cannot be interpreted as applying directly to patients with extensive organic disease of the peripheral arteries.

It is quite apparent from figure 2, which shows in chronological order the development of this type of therapy during the past hundred and thirty-seven years, that the idea is a very old one, and still more important is the fact that the beneficial effects of changes in the environmental pressure were recognized and applied clinically many years ago. The problem, therefore, resolved itself into one of determining the most efficient cycle for the alternation of these pressures and the optimum amounts of negative and positive pressure which, when applied to patients with diseased arteries of the extremities, would bring about the greatest increase in the circulation with the least damage to the delicate tissues of the affected extremity.

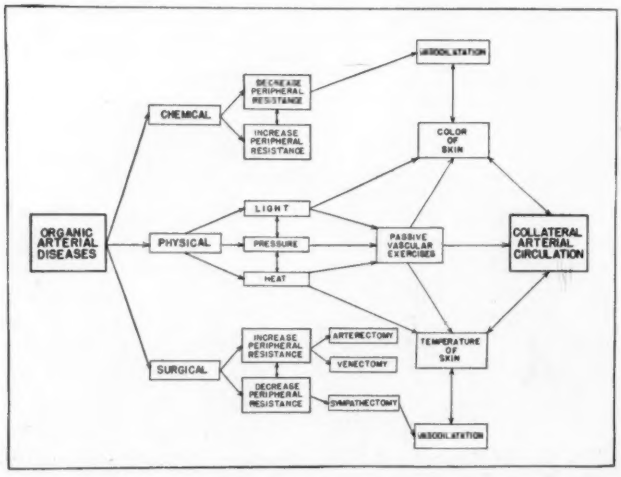

Fig. 5.—Various methods of overcoming the deficiency of arterial circulation in patients with organic diseases of the arteries of the extremities.

In order to conform to the generally accepted principle of dilating or stretching muscular tissue, it appeared from the very beginning quite necessary to cause the pressure to change gradually rather than suddenly. Since this physical method of dilating collateral arterial pathways was essentially passive exercise of the vascular system, the expression passive vascular exercises was coined and the contraction Pavaex was used to designate this method of gradual exchange of pressures about an extremity, with the pressure predominantly in the phase below the existing atmospheric pressure (fig. 3). The experimental Pavaex Treatment Units (fig. 4) were built in order that this method of treatment might be applied to a

EFFICIENCY OF THE
COLLATERAL ARTERIAL CIRCULATION IN EXTREMITIES
BEFORE AND AFTER
INTENSIVE PASSIVE VASCULAR EXERCISES
(PAVAEX THERAPY)

PART OF PERIPHERAL VASCULAR SYSTEM AFFECTED	NONE	PREDOMINANTLY MAJOR ARTERIES	PREDOMINANTLY SECONDARY ARTERIES	PREDOMINANTLY ARTERIOLES	PREDOMINANTLY CAPILLARIES
PATHOLOGIC PROCESS	NORMAL ADULT (CONTROL)	TRAUMATIC OCCLUSION EMBOLISM ACUTE THROMBOSIS	ARTERIOSCLEROSIS OBLITERANS & SENILE & DIABETIC THROMBO-ARTERITIS OBLITERANS	ARTERIOLAR SCLEROSIS THROMBO-ANGIITIS OBLITERANS ENDARTERITIS OBLITERANS	STASIS DUE TO INTENSE COLD (FROZEN FEET)
BEFORE PASSIVE VASCULAR EXERCISES (PAVAEX THERAPY)					
DIAGRAM OF THE ARTERIAL PATHWAYS AND THEIR ANASTOMOSES					
EFFICIENCY OF COLLATERAL ARTERIAL CIRCULATION	±	0	+ +	±	0
EFFICIENCY OF ENTIRE ARTERIAL CIRCULATION	++++	+ −	+ +	+ −	+ −
AFTER PASSIVE VASCULAR EXERCISES (PAVAEX THERAPY)					
DIAGRAM OF THE ARTERIAL PATHWAYS AND THEIR ANASTOMOSES					
EFFICIENCY OF COLLATERAL ARTERIAL CIRCULATION	+ +	+ + + +	+ + +	+	+ +
EFFICIENCY OF ENTIRE ARTERIAL CIRCULATION	+ + + +	+ + + +	+ + +	+ (+)	+ + + +

Fig. 6.—Estimate of the efficiency of the arterial circulation, by oscillometric and calorimetric studies under controlled conditions of temperature and humidity, in patients with normal and with diseased arteries. These results are based on data obtained from the application of 50,000 hours of passive vascular exercise treatment.

large series of patients, with obliterative arterial diseases of the extremities, who had been carefully studied so that the results of the treatment might be properly evaluated. This report is based on clinical data obtained from two and three-fourths years' experience.

Arteriographic studies on patients treated by passive vascular exercises show an enormous increase in the size and number of useful collateral arteries in the distal parts of the extremity which have been treated intensively. Pulses became palpable in the genicular arteries of those patients whose circulatory insufficiency was due to obliteration of the major arteries of the lower leg. Repeated calorimetric and oscillometric studies have demonstrated conclusively that the collateral circulation brought about by this mechanical means remains active and in many patients it continues to become more active for many months after the Pavaex treatments have been discontinued. Experience has shown that approximately 100 hours of passive vascular exercises, given at the rate of at least five hours each day, is sufficient

5. Landis, E. M., and Gibbon, J. H., Jr.: Effects of Alternate Suction and Pressure on Circulation in the Lower Extremities, Proc. Soc. Exper. Biol. & Med. **30:** 593-595 (Feb.) 1933.

to stimulate the development of an adequate collateral arterial circulation in most patients with obliteration of the major or secondary arteries of an extremity when the arteriolar network is relatively normal.

The various methods of overcoming the deficiency of the peripheral circulation of blood in patients with organic arterial diseases of the extremities is shown in figure 5. All the therapy is directed toward the development of an adequate collateral arterial circulation. The physical agents of light, pressure and heat are most important from the therapeutic standpoint. Experimental studies have shown that variations of the environmental pressure produce the greatest effect on the circulation of blood, while variations in environmental temperature and radiation influence more definitely the local metabolism of the tissues. The beneficial effects of hyperthermia during the reconstructive phase after injury to tissues, when the arterial blood supply is ample, have been observed repeatedly. It is a common clinical observation that the application of radiant heat to the extremities of patients suffering from extensive organic arterial diseases frequently causes the gangrene to spread more rapidly or to appear in patients who showed no gangrene at the time such therapy was started. Freeman [6] has recently shown in experimental studies that local application of heat frequently increases the deficiency of circulation by increasing the local metabolism of tissues with the consequent increased demand for arterial blood.

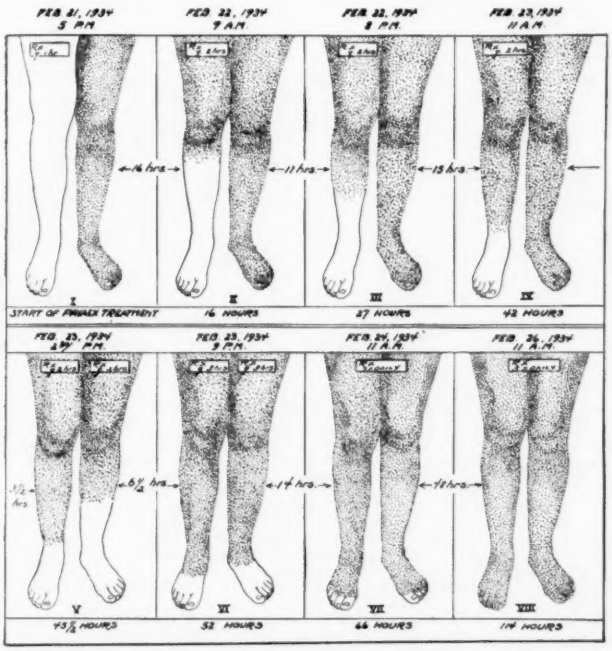

Fig. 7.—Major arterial embolism: Complete occlusion of the right common iliac artery by a clot from the diseased heart. Excruciating pain of five hours' duration relieved in fifteen minutes by passive vascular exercise therapy. Adequate collateral arterial circulation was sustained after seventy-nine hours of treatment to right leg. On the second day after admission to the hospital a second embolus was liberated and lodged at the bifurcation of the popliteal artery. Arterial circulation was restored within a few minutes and remained adequate after thirty-one hours of passive vascular exercise treatment. Schematic drawing shows the level of sustained arterial circulation at various periods during the hospital course. No further treatment has been given and the patient has remained free from circulatory disturbances in the extremities since February 1934.

On the contrary, if the arterial circulation can be increased in proportion to the increase in the demand for blood, the reconstructive processes will take place more quickly. During the past year we have been combining the effects of passive vascular exercises with various degrees of local hyperthermia with encouraging clinical results, especially in patients with moist gangrene of one or more toes or some large indolent ulcer on the extremity. The degree of local hyperthermia that we have employed varies according to the local disturbance, the average being 104 F. Simpson [7] suggested the combination of these physical agents several years ago and we have followed his suggestion of using preheated dry air to bring about the local hyperthermia.

Fig. 8.—Reproduction of photograph of extremities shown in figure 7 one year after passive vascular exercise treatments had been given. No pulses were palpable in the femoral, popliteal, posterior tibial or dorsalis pedis arteries. There were strong pulses in the genicular arteries about both knees and a good pulse in the circumflex iliac artery on the right.

More than 50,000 hours of passive vascular exercise treatment have been given to several hundred patients, with serious and extensive arterial diseases of the extremities. The degree to which the collateral arterial circulation can be developed by this mechanical means depends largely on the actual number of arteriolar and small arterial pathways that are patent and unaffected by the disease process (fig. 6). Obviously the most striking clinical benefits will be observed in patients with sudden obliteration of the major arterial pathways by trauma or disease, and the least striking effects are to be expected in patients with extensive arteriolar obliteration in the distal parts of the extremities.

The influence of the sympathetic nervous system on the physical state of the collateral arteries must be kept in mind at all times. When the deficiency of peripheral distribution of arterial blood is due to high grade angiospasm, which is of central origin, it would be stupid to expect any permanent benefits from a local application to the extremities of some mechanical means of stimulating circulation. On the other hand, Thomas Lewis and his associates have shown that there are varieties of vasospasm due to local derangement in the periphery. It is now well established by the work of Lewis and Pickering [8] and of Coller and Maddock [9] that increased environmental temperature brings about vasomotor relaxation. The use of local hyperthermia in conjunction with passive vascular exercises overcomes the peripheral vasospasm that accompanies the active types of obliterative arterial diseases of the extremities and thus helps to surmount one of the

6. Freeman, N. E.: Effect of Local Temperature on Blood Flow in Extremities, read before the American College of Surgeons, Boston, 1934; Am. J. Physiol., to be published.

7. Simpson, W. M.: Personal communication to the author, March 3, 1933.

8. Lewis, Thomas, and Pickering, G. W.: Vasodilatation in the Limbs in Response to Warming the Body, with Evidence for Sympathetic Vasodilator Nerves in Man, Heart **16**: 33 (Oct.) 1931.

9. Coller, F. A., and Maddock, W. G.: The Differentiation of Spastic from Organic Peripheral Vascular Occlusion by the Skin Temperature Response to High Environmental Temperature, Ann. Surg. **96**: 719-732 (Oct.) 1932.

important obstacles to the formation of a sustained collateral arterial circulation.

Passive vascular exercises have been shown to be an effective means of overcoming the vascular insufficiency in the distal portions of an extremity after acute occlusion of the major arterial pathways has resulted from arterial embolism (fig. 7), arterial thrombosis, ligation of major arteries, or surgical incision of aneurysmal

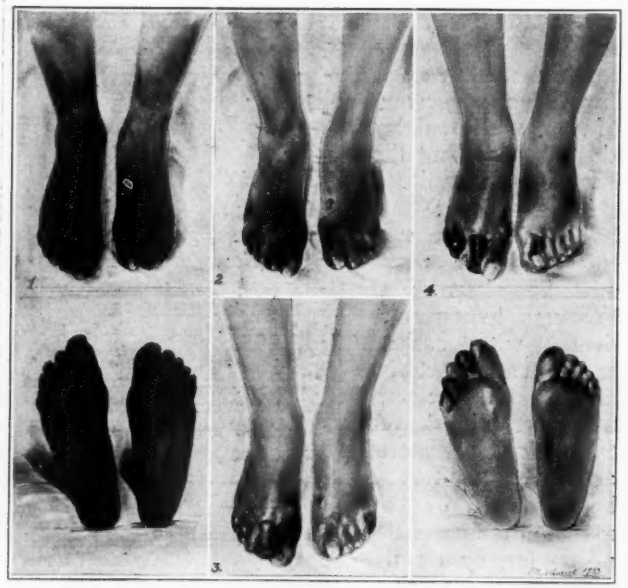

Fig. 9.—Frozen feet: Exposure of fourteen hours to cold of 14 F. Complete loss of sensation, muscular activity and gross stagnation of circulation. Deep purple discoloration of both feet, lower legs and all the toes: (1) a uniform deep purple discoloration of both feet; (2) the appearance after five hours of passive vascular exercise treatment to each lower extremity; (3) appearance of both feet twelve hours after admission to hospital; (4) both feet after twenty-eight hours of passive vascular exercise treatment.

(syphilitic) sacs with ligation of the incoming and the outgoing artery. Frozen feet (figs. 9 and 10) of all degrees have responded promptly, and the serious sequelae of extensive thermal trauma have been prevented in all cases treated by this method in our clinics.

Arteriosclerosis obliterans with or without gangrene and with or without the association of diabetes mellitus has proved to be amenable to passive vascular exercises, since the ischemia of the extremity can be quickly overcome and the gangrene made to demarcate. The presence of moist gangrene adds materially to the seriousness of the disturbance and hinders the development of an adequate collateral arterial circulation due to the widespread destruction, by inflammation, of the smaller arterial and arteriolar pathways in the extremity. It is especially in this type of patient that the combination of local hyperthermia and passive vascular exercises finds its greatest use.

Fig. 10.—Actual condition of feet shown in figure 9 three weeks after admission to hospital. Only tips of two toes were lost. The patient has been entirely free from symptoms referable to the feet since November 1933.

In the treatment of gangrene, clinical judgment must be exercised in all cases, and a conservative method of treatment is never to be recommended when only heroic surgical procedures are indicated. Passive vascular exercise has been suggested primarily as a means of preventing the serious complications of organic arterial diseases and not as a cure for extensive gangrene. In selected cases, especially in the fourth and fifth decades of life, the method offers a real aid to those who prefer to do the more conservative types of amputations through the foot or lower leg (fig. 11).

In true thrombo-angiitis obliterans there is usually an extensive obliteration of the arteriolar and small arterial beds; consequently the reestablishment of an adequate arterial circulation can be accomplished only with considerable difficulty. I believe this form of therapy offers only temporary relief from the circulatory disturbances characterizing this disease entity.

Visceral pain, which results from the lack of arterial blood to the tissues of an extremity, can be quickly relieved by passive vascular exercises. The excruciating pain associated with acute occlusion of a major artery of the extremity can be quickly and permanently relieved. The intermittent claudication associated with

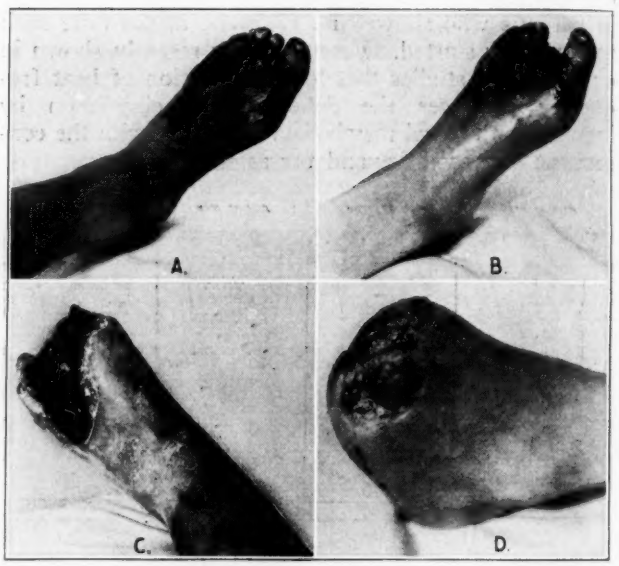

Fig. 11.—Arteriosclerosis obliterans with moist gangrene: A white man, aged 57, with severe diabetes mellitus, had lost the right leg eighteen months before because of gangrene. *A*, condition of left foot at time of admission to hospital; major amputation was refused. *B*, condition of foot two weeks later after diabetes had been controlled and usual palliative methods employed. *C*, six weeks after admission to hospital, showing considerable extension of the gangrenous process; major amputation was refused. *D*, three weeks after a Lisfranc's amputation had been performed. At the time of the amputation not a single bleeding vessel was encountered. After forty-two hours of passive vascular exercise therapy the stump was covered with healthy granulation tissue. This amount of treatment was given over a period of ten days. Small pinch grafts of skin were applied and the surface was almost completely epithelialized when *D* was taken. The stump has remained healed and has been useful for weight bearing without pain for more than two years.

extensive arteriolar obliteration is usually only moderately improved, while the type associated with major arterial disease has been benefited to a satisfactory degree in the majority of patients. Local hyperthermia enhances greatly the effect of passive vascular exercise in such cases.

Acute or subacute thrombophlebitis must be considered a definite contraindication to passive vascular exercises. Extensive obliteration of the arteriolar bed due either to the late stages of thrombo-angiitis obliterans or to extensive arteriolar sclerosis should be considered a contraindication, since little or no lasting benefit has been obtained from this therapy. Varicose veins are not affected by passive vascular exercises.

With the addition of local hyperthermia, the passive vascular exercise method of treatment has been used in our clinics with good results in the less malignant forms of cellulitis of the foot associated with trophic lesions of the extremities due to arterial insufficiency (fig. 12). Such problems require judgment, and no definite rules can be laid down for the application of any one method of treatment for all varieties of such disturbances.

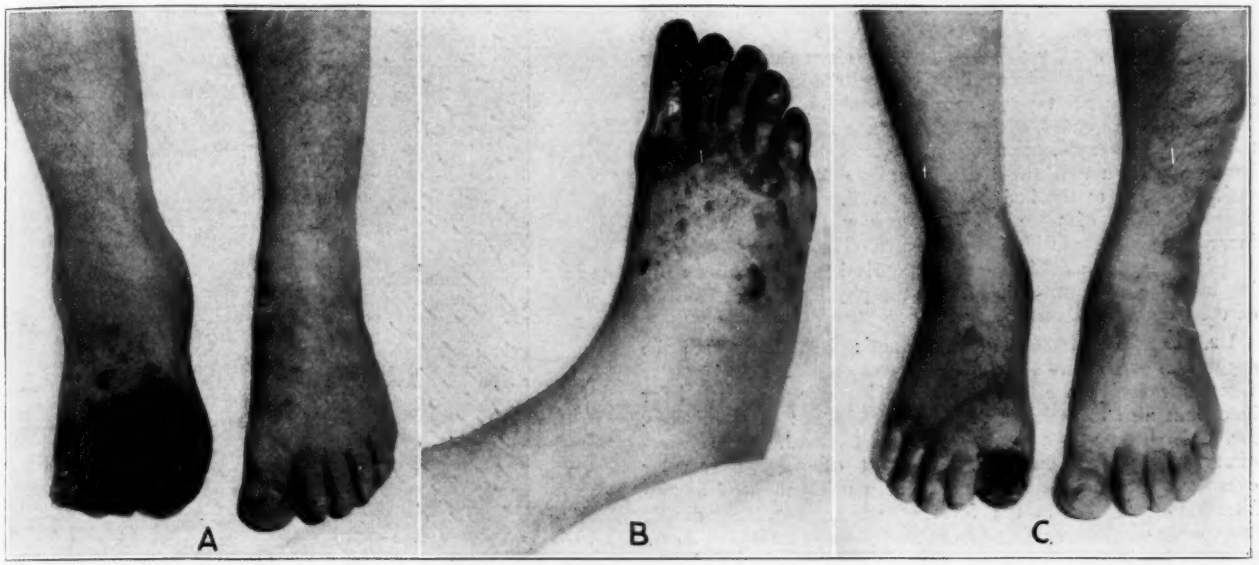

Fig. 12.—Gangrene of the foot with acute cellulitis and lymphangitis of the foot and leg treated with local hyperthermia in conjunction with passive vascular exercise. *A*, condition of the foot at the time of admission to hospital. Patient had been unable to lie flat for three months, with gangrene extending, pain constant and excruciating. Acute pain relieved after four hours of passive vascular exercise treatment and local hyperthermia. Patient was then able to lie flat in bed and sleep without drugs. *B*, condition of foot after two weeks of hyperthermia plus passive vascular exercise. *C*, condition of the foot six weeks after admission to hospital. Patient was entirely free from pain and walked without discomfort, and only a small granulating surface at the tip of the great toe remained. This was epithelizing slowly.

From the benefits that we have brought about by intensive application of this method of treatment to a large series of patients with obliterative arterial diseases, we [10] are confident that it offers a logical and efficient means of artificially stimulating the development of collateral circulation by enlarging the existing collateral arterial pathways in the extremities when the deficiency of the peripheral distribution of blood is due to organic obliteration of the major or secondary arteries.

ABSTRACT OF DISCUSSION

DR. H. M. ELDER, Montreal: I should like to express appreciation of Dr. Herrmann's avoidance of the use of proper names. All are familiar with the passion of the public for labels. "Doctor, just what is wrong?" is a very common query, and the temptation to cut short discussion that the patient could not possibly understand by answering, "You have Buerger's disease," or "You have Raynaud's disease" or something of that sort is one to which a great many physicians are prone to yield. The difficulty from a scientific point of view is that there aren't nearly enough names to go round. All physicians are accustomed to seeing many cases of a mixed occlusive and spastic type that cannot be catalogued, and a classification of cases as done by Dr. Herrmann is a great step forward in permitting an accurate comparison and evaluation of the results obtained by any method of treatment. As Dr. Herrmann pointed out, there are many possible combinations of major arterial and arteriolar occlusion, and added to these are the various spastic phenomena. The family of vasospastic diseases is a large one and is all too frequently covered by the generic term Raynaud's disease. It is undoubtedly true that in the majority of the so-called chronic occlusive diseases, omitting those caused by emboli, there is a certain element of spasm present, and it is not always easy without careful investigation to determine which is the major factor in the causation of symptoms. Whether one believes in the central origin of vasospastic stimuli or agrees with Sir Thomas Lewis in his contention that these purely spastic types of arterial insufficiency are phenomena resulting from peripheral stimuli makes little or no difference, since it is obvious that in order to relieve the condition the circle must be broken somewhere, and ganglionectomy appears to offer the best means of accomplishing this. Dr. Herrmann has shown that, in the occlusive vascular cases, success lies in the development of an adequate collateral circulation and not in an attempt to force more blood through already diseased vessels. Passive vascular exercise has been demonstrated to be efficient. Ganglionectomy will permit full dilatation of all the vessels of an extremity but does not greatly increase collateral circulation. So far surgery has been limited to cases that were essentially spastic in origin. Dr. Herrmann has shown a method of coping with those of an occlusive nature. Possibly the next step should be the combination of the two as an ideal means of treatment in cases not amenable to treatment by either one alone.

DR. NORMAN E. FREEMAN, Boston: Passive vascular exercise may be the only means by which the circulation can be rendered adequate in the presence of severe obliterative arterial disease. In the peripherial circulatory service at the Massachusetts General Hospital in Boston we have been interested in some of the mechanisms that regulate and control the flow of blood in the periphery. Studies on the rate of circulation in the hand at different temperatures have demonstrated a dual control. Through the sympathetic vasomotor nerves the blood flow to the hand is modified in accordance with the needs of the body. After the central control has been removed by sympathectomy, the blood flow is found to be regulated by the metabolic requirements of the tissues. The circulation in the normal hand increases as the local temperature is raised. However, when the central vasomotor control is removed by sympathectomy, after the vasomotor tone has been regained, we still find that the circulation is dependent on the local temperature. This observation puzzled us until it was realized that the tem-

10. Reid, M. R., and Herrmann, L. G.: Treatment of Obliterative Vascular Diseases by Means of an Intermittent Negative Pressure Environment, J. Med. **14**: 200 (June) 1933. Herrmann, L. G.: Syphilitic Peripheral Vascular Diseases: Treatment by Means of an Intermittent Negative Pressure Environment, Am. J. Syph. **17**: 305 (July) 1933. Herrmann, L. G., and Reid, M. R.: El tratamiento pavaex (ejercicio vascular pasivo) en las enfermedades debidas a obliteración arterial de las extremidades, Rev. méd. veracruzana **14**: 1122-1127 (April 1) 1934. Reid, M. R.: Diagnosis and Treatment of Peripheral Vascular Diseases, Am. J. Surg. **24**: 11 (April) 1934. Herrmann, L. G., and Reid, M. R.: The Conservative Treatment of Arteriosclerotic Peripheral Vascular Diseases: Passive Vascular Exercises (Pavaex Therapy), Ann. Surg. **100**: 750-760 (Oct.) 1934.

perature of the hand determined the metabolism of the tissues. As the local needs increased with a rising temperature, the blood supply was raised to meet the demands. Gangrene may be defined as the result of a discrepancy between the metabolism of the tissues and the supply of blood available to meet these nutritional needs. In an extremity affected by organic obliteration of the vessels, application of heat locally will serve only to increase the disproportionality because the vessels are already unable to supply an adequate amount of blood. Raising the temperature may increase the flow slightly, but it is sure to increase the needs. Many of us have experienced the excruciating pain that is produced when we have incautiously immersed our hands or feet when numbed with cold into hot water. If, however, we first restore the circulation by rubbing and massage, we suffer no pain. In the treatment of obliterative vascular disease the application of heat locally is dangerous. Pain will be increased, and even gangrene may be produced by the injudicious application of heat. In other experiments it has been shown that the reflex vasodilatation from the application of heat to the body is of no avail. Up to the present time we know of no physiologic agency that is capable of increasing the flow of blood to the extremities of these patients. Passive vascular exercises offer a physical method for supplying blood to the extremities when the physiologic mechanisms of the body have failed.

DR. LOUIS G. HERRMANN, Cincinnati: It was through the suggestion of Dr. Freeman that heat was combined with passive vascular exercise in order not only to increase the demand for blood but also to increase the local metabolism of the tissues. Dr. Elder brought out the important fact that the use of vasodilating substances enhances the effect of passive vascular exercises. For a long time I have been using the oral administration of alcohol in the form of whisky regularly during the course of passive vascular exercise therapy and have found that it aids in bringing about a much greater increase in the arterial circulation and a quicker establishment of a collateral arterial circulation.

THE SO-CALLED MOSAIC FUNGUS AS AN INTERCELLULAR DEPOSIT OF CHOLESTEROL CRYSTALS

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AND
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Lecturer in Dermatology and Research Worker on Dermatophytes, Respectively, University of Manitoba Faculty of Medicine
WINNIPEG, MANIT.

When scrapings from the feet mounted by the usual method in potash are examined microscopically for the presence of ringworm fungi, two kinds of fungus-like structures are commonly observed. One kind consists of long, more or less sinuous, sparingly branched threads, which are universally recognized as true hyphae belonging to a dermatophyte (fig. 1). Attempted isolations from such material yield a high proportion of cultures. The other kind of fungus-like structure consists of irregular discrete branching threads, which follow the contours of the epithelial cells (fig. 2). It has been named "mosaic fungus" by Weidman and is still the subject of controversy, as its supposed status as a fungus has not hitherto been clearly proved or refuted. Isolations of dermatophytes have seldom been reported from material that contained only the "mosaic fungus."

Weidman,[1] who in 1927 drew attention to these bodies by his original description, suggested that if they are fungi they must be in a degenerate state. Other workers have regarded them as pathogenic fungi which have been incompletely destroyed by the immunity reactions of the body. Others again have regarded them as consisting of air or potash between the cells, or as collections of intercellular organic débris.

Fig. 1.—Scale from feet in potash, showing the true hyphae of a dermatophyte. Magnification, 460 diameters.

At Winnipeg during the past four years, in the course of routine laboratory examinations, the "mosaic fungus" has frequently been observed. Oct. 18, 1934, specimens were prepared by placing scales on a slide in a drop of 20 per cent potash under a cover glass and leaving for an hour or more without heating. The cover glass was then pressed gently to flatten out the macerated scale. The mosaic was located with the low power of the microscope and then examined with the oil immersion objective and the 10 × oculars of a Leitz binocular microscope giving a magnification of about 930 diameters. The elements of the mosaic were immediately seen to consist of piled masses of the flat rhombic crystals of cholesterol. Some of the crystals showed the reentrant angle often seen in crystals of this substance.

Since our original discovery that the mosaic can be resolved into an aggregation of cholesterol crystals, scales from a number of other patients have been examined and the crystalline nature of the "mosaic fungus" has been amply confirmed. After the scale has been pressed out under the cover glass, most of the crystals are seen in surface view, but in unflattened preparations a number are seen edgewise and the crystalline nature of the elements is then obscured. The crystals are small, seldom larger than 10 microns in length, and transparent. The masses in which they are arranged constitute the irregular angular segments of the mosaic (figs. 3 and 4). Cold potash gives the best specimens, but the crystalline structure can also be demonstrated after heating.

Mosaics from different patients show considerable variation in the regularity of the crystalline form. While some mosaics are composed of well formed crystals, similar to those illustrated in figures 3 and 4.

This work was made possible by a grant from the Banting Research Foundation, Toronto.
Read before the Section on Dermatology and Syphilology, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Weidman, F. D.: Laboratory Aspects of Epidermatophytosis, Arch. Dermat. & Syph. **15**: 415 (April) 1927.

others have the constituent elements irregularly disposed. The platelike structure of the so-called mosaic elements is, however, usually discernible on careful focusing.

The crystals must not be regarded as an artefact incidental to the action of the potash, as by the following method they can be demonstrated in the dry scales without the use of that reagent: Dry scales are soaked in xylene to dissolve out the cholesterol. The xylene is then allowed to evaporate, whereupon the spaces formerly occupied by the crystals become filled with air. The scales are mounted in Gurr's "neutral mounting medium." Between the dry epithelial cells is then seen an almost perfect mold of the crystals.

The mosaic consists of flat rhombic crystals, sometimes with a reentrant angle, resembling cholesterol; it is insoluble in water, slowly disappearing on prolonged contact with strong potash; it is soluble in xylene and other fat solvents; it is found between the cells of the stratum corneum in certain cases of dermatitis of the hands and feet. The so-called mosaic fungus therefore consists principally, if not entirely, of crystals of cholesterol. It is proposed that the structures should be renamed the *cholesterol mosaic*.

Whether the deposition of the crystals of cholesterol in the skin bears any relation to infection by ringworm fungi, or whether two distinct processes are involved, is not yet known. It is, however, obvious that in the present state of our knowledge the presence of the

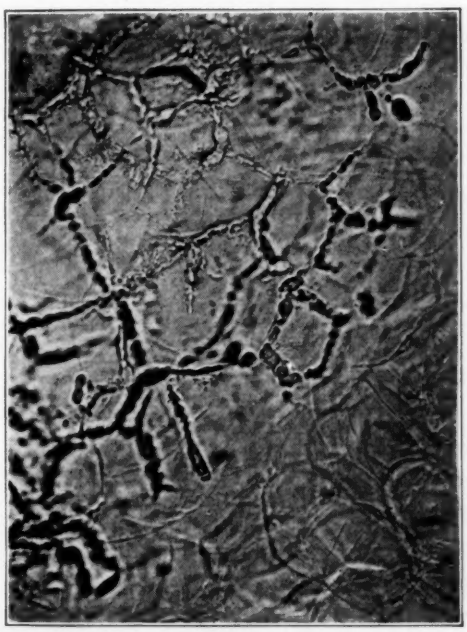


Fig. 2.—Scale from feet in potash, showing the so-called mosaic fungus. Magnification, 460 diameters.

cholesterol mosaic can no longer be regarded as evidence of infection by a dermatophyte.

6 Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. JOHN GODWIN DOWNING, Boston: The paper of Drs. Davidson and Gregory confirms the work of those of us who have been unable to culture mosaic forms found in the skin and dispels what Whitfield termed the ghosts of mycology, which have been haunting dermatologists for so many years. The confusion, in part, has been due to the diversified conceptions of mosaic forms by different authors; however, today the mosaic fungus has few supporters. Cholesterol is a logical finding. It is not like fatty acids, easily saponified by the addition of alkalis. It comprises about one sixth of the normal skin fat and is increased in the pathologic skin, as shown by Chorazol, who found an increase of cholesterol in the affected skin of forty patients with fourteen types of dermatitis. Becker and Ritchie concluded that the so-called mosaic fungus was a collec-

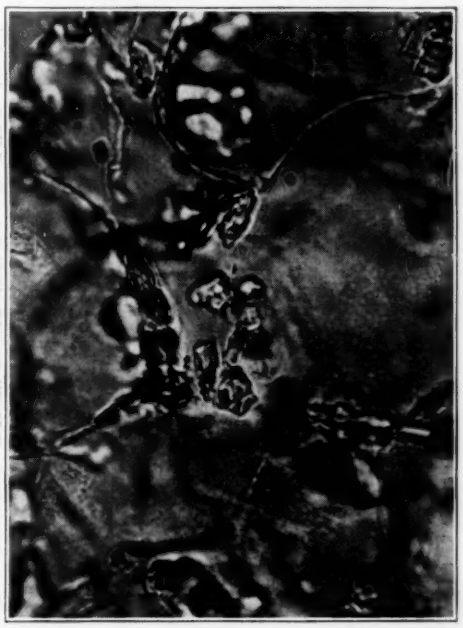


Fig. 3.—Elements of the mosaic in scale cleared in potash mounted in glycerin. Crystals to left of center seen edgewise. Magnification, 1,000 diameters.

tion of organic material resulting from inflammatory changes in the epidermis. I have found these mosaic forms in persistent industrial dermatoses without mycelia, and cultures grew only bacteria, molds and yeasts. The characteristic crystals with notched corners are seen in pictures, and I should like to ask the authors if they have used polarized light or microchemical tests for cholesterol on structures that were not so apparent. After I read this article, skin scales, treated with 10 per cent potassium hydroxide gently heated, showing mosaic forms were washed in water and a cholesterol test was done which consisted of placing them in a drop of five parts of sulphuric acid and one part of water on a slide and examining them under the microscope. The mosaic forms stained red and then violet, and after fifteen minutes a drop of dilute iodine solution was applied under the cover glass and the mosaic forms took on a green-blue with the tissue remaining unstained. Later, scales showing mosaic figures and mycelia were treated similarly, and the mosaic figures reacted as before, but the mycelia showed only their outline. It is interesting that, with sulphuric acid and iodine, cellulose turns blue. However, in the case of cellulose, sulphuric acid forms a gummy precipitate which stains blue with the addition of iodine, but the mosaic figures do not appear to undergo any change with sulphuric acid—they show a carmine red and then on the addition of iodine produce the blue. These microchemical studies need further study before an opinion can be formed, for they are merely suggestive and not the clear cut observations that are given in the authors' report.

DR. SAMUEL W. BECKER, Chicago: Several years ago Ritchie and I studied mosaic fungi and decided that they are not fungi, air or potassium hydroxide but particulate matter between the cells, which accounts for their mosaic contour. Weidman also has called attention to their particulate nature. We noted that they were more frequent in inflammatory lesions, especially the tops of vesicles, and thought the substance might result from inflammation. We allowed epidermis containing mosaic fungus to disintegrate in potassium hydroxide in the moist chamber and noted that the particles forming the mosaic assumed an ovoid or spherical shape and were surrounded by

a highly refractile ring. This material was similar to other artefacts to which we called attention. We endeavored without success to reproduce the artefacts by combinations of olive oil, blood serum and potassium hydroxide. Since Stumpf's article stating that the material forming mosaic fungus is free fatty acid, Thatcher and I have made further studies. We succeeded in producing artefacts similar to those resulting from the disintegration of mosaic fungi by injecting oleic acid into the

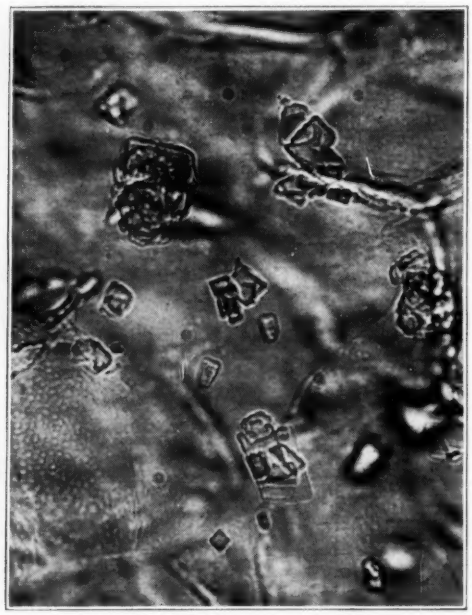


Fig. 4.—Elements of the mosaic in the same preparation as in figure 3 seen in surface view, showing reentrant angles of cholesterol crystals. Magnification, 1,650 diameters.

epidermis. This did not result in the formation of typical mosaic fungi. It is probable that mosaic fungus is composed at least in part of saponified lipoid material, possibly cholesterol, but more probably oleic acid, which is the fatty acid most apt to be found at the periphery of the body.

DR. MARTIN F. ENGMAN JR., St. Louis: Engman Sr. and Kooyman have made careful studies of normal skin fats, which they reported in the *Archives of Dermatology and Syphilology* in the last two years. Their studies suggest confirmation of the idea that the mosaic fungus may be cholesterol deposit. Kooyman found in the basal layer and lower portions of the epithelium considerable amounts of phospholipin present with a relatively small amount of cholesterol, but in the cornified layer the opposite obtained. There was very little phospholipin and a great deal of cholesterol. The skin used for these studies contained no sebaceous glands. Skin from the soles of the feet and palms of the hands was used.

DR. A. M. DAVIDSON, Winnipeg, Manit.: In regard to Dr. Downing's discussion of the color test, we did the color tests or, rather, I had a biochemist do them for me, but I thought I would stick to my observations and make sure that the substance might be identified by the reentrant angle of the cholesterol crystal. I hope to do further color tests later. Since making that lantern slide I enlarged it to 1,870 diameters simply by enlarging the photograph and the crystalline structure is still more evident.

Perhaps the Three Greatest Advances.—In our understanding of the processes of life, perhaps the three greatest advances of the past hundred years have been, first, the establishment of the general principle of evolution with the subsequent working out of something of its genetic "mechanism"; second, the discovery of the widespread existence of activities of bacteria and the development of the theory of infectious disease and the science and techniques of sanitation; third and latest, the development which for convenience we refer to as the newer knowledge of nutrition and of the nutritional characteristics of foods.—Sherman, H. C.: Food and Health, New York, Macmillan Company, 1934.

Clinical Notes, Suggestions and New Instruments

PEDUNCULATED THROMBUS OF THE LEFT AURICLE SIMULATING MITRAL STENOSIS

DAVID KAPLAN, M.D., AND EDWARD W. HOLLINGSWORTH, M.D.
HINES, ILL.

The number of thrombi, ball or pedunculated, of the left auricle reported has been small, and Abramson[1] states that thrombi which form before death are a relatively uncommon postmortem finding. Welch[2] in 1899 collected twenty-five instances of "pedunculated polyps" in the left auricle. Covey, Crook and Rogers[3] found twenty-one cases of ball thrombi reported in the literature up to 1928 and added two of their own. Scott and Saphir[4] reported a pedunculated thrombus in 1928 and Schwartz and Biloon[5] added three cases in 1931. In all these cases, auricular fibrillation and mitral stenosis were present except in one of hypertension of Schwartz and Biloon. Von Ziemssen[6] was the first to conclude that mitral stenosis was necessary for the formation of auricular thrombi, but this was disproved by the case of Schwartz and Biloon and now by ours, in which there was an unusually large mitral valve. The authors who suspected the presence of auricular thrombi ante mortem[7] state that the diagnosis should be made or suspected in all cases of mitral stenosis in which temporary or permanent occlusion of peripheral vessels develops.

REPORT OF CASE

A white man, aged 38, married, a journeyman plumber, admitted to Edward Hines Jr. Hospital March 10, 1934, complained chiefly of weakness and a fast pulse.

He had had influenza on numerous occasions since 1918, typhoid and diphtheria as a child, poor teeth ever since 1918, and a tonsillectomy in February 1928. He stated that he had not had any venereal disease. He had been working regularly until March 8.

In the fall of 1929 he started to "feel rotten" and was nervous and irritable. He was told that his "heart nerves" were diseased and that he had a "leaky heart." He stayed home but not in bed for three months and then returned to work. In December 1933 he had a sore throat of one week's duration, at which time he was told that his heart was all right; but a week later the pulse became fast and he felt weak. He was then told to stay in bed for a week, after which he returned to work until March 8, 1934, save for occasional "days off." March 10 he felt very weak and nauseated. He stated that there was no swelling of the legs but that he had had a slight cough.

Fig. 1.—The chest, March 14, 1934.

On physical examination the patient was dyspneic and bedridden. He was 72½ inches (189 cm.) tall and weighed 162½

From the Edward Hines Jr. Hospital.

Published with the permission of the medical director of the Veterans' Administration, who assumes no responsibility for the opinions expressed or the conclusions drawn by the authors.

1. Abramson, J. L.: Ann. Clin. Med. **3**: 327 (Oct.) 1924.
2. Welch, W. H., in Allbutt, T. C.: System of Medicine, London, Macmillan & Co. **6**: 185, 1899.
3. Covey, G. W.; Crook, Roy, and Rogers, F. L.: Am. J. M. Sc. **175**: 60 (Jan.) 1928.
4. Scott, R. W., and Saphir, Otto: Am. J. M. Sc. **175**: 66 (Jan.) 1928.
5. Schwartz, S. P., and Biloon, Sol: Am. Heart J. **7**: 84 (Oct.) 1931.
6. von Ziemssen: Zur Pathologie und Diagnose der Gestielten und Kugelthromben des Herzens, Congress f. inn. Med. **9**: 281, 1890.
7. Welch.[2] Covey, Crook and Rogers.[3]

pounds (74 Kg.). Inspiration was slightly harsh at the bases posteriorly; there were no râles. The point of maximum impulse of the heart was visible and palpable in the fifth intercostal space at the midaxillary line. There was an apparently definite presystolic thrill at the apex. The left border was percussed about 14 cm. from the midsternal line, the right border about 4 cm.; basal dulness was normal. The first sound was very sharp at the apex. The pulmonic second was about

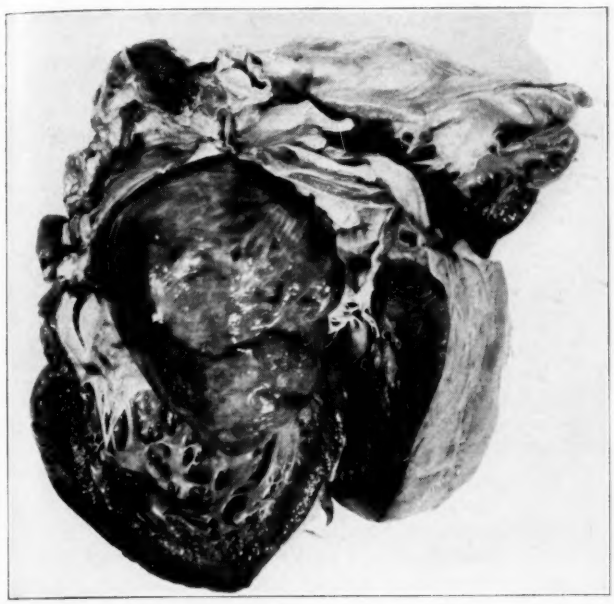


Fig. 2.—The thrombus in the left auricle covering the mitral valve.

normal but louder than the aortic second, which was soft. There was a rumbling presystolic murmur at the apex, immediately followed by a blowing systolic murmur, which was transmitted to the left. The arteries were soft and compressible. The pulses were small, equal and absolutely irregular. The pulse rate in a recumbent position was 84, the heart rate 144, and the blood pressure 134 systolic, 90 diastolic. There was moderate dyspnea, slight cyanosis, and moderate engorgement of the cervical vessels. The liver was palpated four fingerbreadths below the right costal border. There were no signs of ascites, although there was edema of the extremities.

The electrocardiogram showed auricular fibrillation with a ventricular rate of 130 and slurring of the QRS complex in leads 2 and 3. The T wave was inverted in lead 1 and upright in leads 2 and 3.

Urinalysis showed the presence of albumin, a few white blood cells, epithelial cells, cylindroids and granular casts. The Wassermann and Kahn tests of the blood were negative. The blood count was: red blood cells, 4,200,000; white blood cells, 12,000; polymorphonuclear leukocytes, 70 per cent; small mononuclears, 20 per cent; large mononuclears, 10 per cent; hemoglobin, 80 per cent.

Roentgen examination of the chest at a distance of 2 meters showed the greatest transverse diameter of the heart to be 18 cm., the greatest internal chest diameter 31.5 cm., and the aortic arch 5.5 cm. There was a generalized fuzziness throughout all the lobes of the lungs.

The clinical diagnosis at that time was rheumatic valvular disease, mitral stenosis and regurgitation, myocarditis with hypertrophy and dilatation, auricular fibrillation, and congestive heart failure.

The patient was put to bed and given large doses of digitalis. The next three days he vomited greenish material after breakfast. March 17 he complained of pains in the chest and expectorated large quantities of bright red blood, which was assumed to be caused by pulmonary infarction. March 19 he became jaundiced and showed evidences of fluid in the left side of the chest. On the 20th the jaundice had decreased but the sputum was again streaked with blood. On the 22d he became cyanosed and irrational, and there were signs of fluid in both sides of the chest. On the 23d he became stuporous and deeply jaundiced, with hiccups. March 28 the blood count showed: red blood cells, 5,580,000; white blood cells, 45,100; polymorphonuclear leukocytes, 92 per cent. The van den Bergh test gave a prompt direct reaction; the icterus index was 24. He grew gradually worse and died, March 29, markedly cyanosed and jaundiced. Fibrillation persisted throughout his hospital stay.

Autopsy was performed by Dr. W. L. McNamara, pathologist.

The body was fairly well developed and fairly well nourished. There was a severe degree of jaundice involving the skin and sclerae; the vessels of the neck were engorged, with some cyanosis of the face and slight edema of the ankles.

About 200 cc. of fluid was noted in the abdominal cavity. The liver was enlarged and rather hard; the spleen was slightly enlarged and firm, and the glands were not enlarged.

There were no adhesions to the chest plate, both lungs being partially collapsed. There was about 1,000 cc. of fluid in each side, with an icteric tinge. The pericardial sac was enormous and measured 19 cm. at the cardiodiaphragmatic angle; it contained about 150 cc. of fluid. The right side of the heart was markedly dilated.

The heart weighed 870 Gm. The right side comprised about two thirds of the anterior surface. When the left auricle was opened a large thrombus was noted, measuring 7 by 9 by 5.5 cm., which was attached to the lateral wall over an area measuring 25 by 12 mm., covering the region of the foramen ovale as seen on the right side of the intra-auricular septum. This mass was well organized, and the surface was very shiny, of a gelatinous-like appearance and almost filled the mitral orifice. In the fixed specimen the walls of the auricle could not be drawn together around the mass. A mild atheromatous change was noted in the ascending part of the aorta, the coronary orifices being somewhat smaller than normal. The aortic leaflets were somewhat thickened at the attached edges, and the mitrals were thickened and ballooned. The coronary vessels themselves showed mild intimal thickening. The wall of the left auricle was definitely hypertrophied; that of the left ventricle measured between 12 and 16 mm., and of the right ventricle 11 mm. The endocardium of the left ventricle was somewhat thickened, and there was a slight atheromatous change of the descending aorta just above the bifurcation. The peripheral vessels were mildly thickened. The mitral valve measured 15 cm.

Fig. 3.—The thrombus of the left auricle lifted upward, exposing the large mitral orifice (15 cm.).

The lungs together weighed 1,350 Gm.; both were partially collapsed, and there was some deposit of fibrin. There was

a hemorrhagic infarct in the upper portion of the right midaxillary line of the lower lobe measuring about 2 cm. in diameter. Marked congestion was found at both bases. On section of the lungs there was noted quite marked atheromatosis of the pulmonary vessels, extending to the finer ramifications, and a moderate pneumoconiosis.

The liver weighed 1,450 Gm.; it was rather firm and the capsule was smooth. On section the nutmeg markings of chronic passive congestion were seen.

The spleen weighed 150 Gm. and was a grayish blue. The capsule was not thickened but was rather firm. On section quite a marked chronic passive congestion was seen with some fibrosis.

The anatomic diagnosis was mural thrombus in the left auricle with partial obstruction of the mitral valve orifice, bilateral pleural effusion, bilateral collapse of the lungs, hemorrhagic infarct of the right lung, pulmonary arteriosclerosis, chronic passive congestion of the liver and spleen, icterus, and mild fibrosis of the spleen.

MICROSCOPIC EXAMINATION

According to Dr. H. C. Fortner, pathologist of this facility, a section of the heart showed some hypertrophy of the muscle fibers; section of the thrombus showed a rather thick layer of well organized fibrous tissue covering a thrombus with much young fibrous tissue.

SUMMARY

In a case of pedunculated thrombus of the left auricle with clinical changes simulating mitral stenosis, no peripheral vessel disturbances were found; auricular fibrillation was present, and there was no stenosis of the mitral valve. We have been unable to find a report of a similar case.

UNUSUAL CASE OF ACTINOMYCOSIS OF THE HAND

R. S. HOLLINGSWORTH, M.D., CLINTON, MO.

This unusual condition of actinomycosis is presented to remind physicians that the ray fungus infection is not an infection of only the jaw and neck but may occur on any part of the body following an injury with a foreign body and subsequent exposure to the ray fungus.

REPORT OF CASE

F. H. T., a man, aged 65, seen at my office, Nov. 14, 1934, complained of a painful sore on the left hand, which he said

Fig. 1.—Actinomycosis of hand before treatment.

had been diagnosed as cancer by several physicians. He said that he had been advised to have his arm amputated.

Two and one-half years before, the patient was cutting a hedge and ran a hedge thorn into the back of his left hand. About a week later this place began to swell. He went to a physician who opened the swelling, but on finding no pus he cauterized the swelling; since that time the sore had spread over the entire back of the hand, as shown in figure 1, and around on the palm.

When I examined the hand my first impression was that the condition was malignant; however, the length of time that it had been developing with no loss of weight or enlargement of the adjacent lymph nodes led me to believe that it was not malignant.

When one of the nodules was opened, several small white and yellow bodies were squeezed out, which made me feel that I was dealing with one of the parasitic diseases.

Fig. 2.—Healed lesion six months after operation.

I asked the patient if he had treated a cow with lumpy jaw during or about the time that he ran the thorn in his hand, and he stated positively that he had not. Realizing, however, that in all parasitic diseases one gets a history of the foreign body injury, I was not satisfied with his story and sent him home, telling him to return in a few days, since I wanted to remove a piece of the lesion for tissue section. He returned the next day, however, to correct his statement of the day before, for on his way home he had told his wife what I had asked him and she reminded him that he had treated two cows with lumpy jaw at that time, and the head of one had come in contact with his hand, smearing a quantity of pus over the back of it.

The lesion consisted of numerous raised ulcerated, pinkish nodules; these nodules contained a foul smelling purulent material. Considerable scar tissue was present over the back of the hand. At the base of the fourth finger was a large ulcerated area, which was the site of the initial lesion. The growth had extended between the fourth and fifth fingers and around on the palm of the hand. The fourth and fifth fingers were fairly stiff and it was impossible to extend them fully.

From the history and appearance of the lesion I made a tentative diagnosis of actinomycosis. December 4, assisted by Dr. J. O. Smith, I excised the entire lesion, beginning my incision in the normal tissue. The lesion was dissected down to the tendons of the fingers. The raw area was painted with tincture of iodine, and dressings of compound solution of iodine alternated with dressings of 1 per cent copper sulphate were used. For three weeks the patient was given biweekly intravenous injections of 20 cc. of sodium iodide and daily doses of dipropyl iodine proteinate by mouth. After operation the pain promptly ceased and a healthy granulating surface was obtained.

The specimen obtained at operation was sent to Dr. F. C. Helwig, pathologist at St. Luke's Hospital in Kansas City, Mo., and the completed slides were also examined by Dr. R. L. Sutton Jr. of Kansas City. Pathologic examination revealed well differentiated, early, squamous cell epithelioma, type 1, not highly malignant. In a personal interview they stated that the tissue was very unusual and not typical in many respects of an epithelioma, though since no mycotic colonies were found the diagnosis of epithelioma was the only feasible one from the tissue at hand.

At operation some of the yellow granules were obtained and squeezed between glass slides. After staining with Gram's stain the material showed that it consisted mostly of keratinized

cells. In one slide I felt that I found definite evidence of branching mycelia.

COMMENT

Figure 2 shows the healed lesion shown in figure 1, April 26, 1935. The entire area was almost completely healed, no raw areas remaining. The fourth and fifth fingers were still rather stiff and drawn but more movable than they had been at first.

In my opinion the reason the pathologic report did not agree with the medical diagnosis was that the chronic irritation of the parasitic disease over such a long period resulted in the formation of a slow growing epithelioma.

Poague Building.

A NEW DIAGNOSTIC PROCEDURE FOR DIAPHRAGMATIC HERNIA: "THE SEIDLITZ POWDER TEST"

DAVID BALL, M.D., NEW YORK

Diaphragmatic hernia probably occurs more frequently than published case reports indicate. This is evidenced by the frequent accidental finding of the condition on the postmortem table and in my own experience.

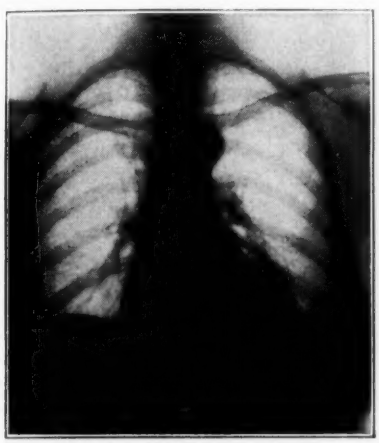


Fig. 1.—Linear shadow to left of cardiac border.

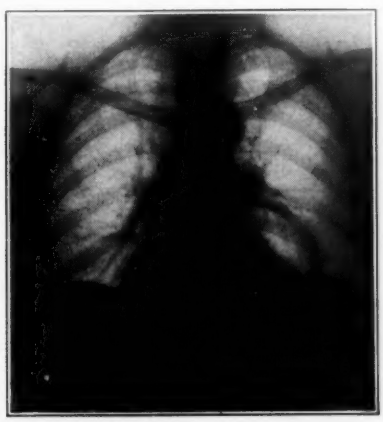


Fig. 2.—Appearance of shadow with increased air space caused by seidlitz powder.

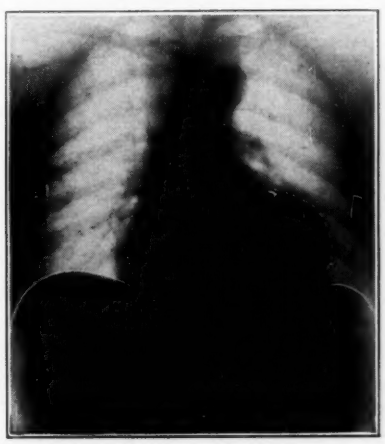


Fig. 3.—Outlines of stomach filled with barium sulphate traced over for purpose of better photographic contrast.

Over a period of two years in private office practice in association with Dr. Marcus A. Rothschild, I have detected and observed seven cases of diaphragmatic hernia by the method to be described. All the cases were referred for diagnosis because of symptoms that were thought to be cardiac or gastric in origin or because of weakness due to a secondary anemia. In the course of fluoroscopy during the routine physical examination in all the cases, an extracardiac shadow was seen. The shadow is either linear or curved and does not conform to the usual lung markings or resemble any well known pathologic condition in the lung. It occurred to me during fluoroscopy that, if these "shadows" were due to a diaphragmatic hernia with a portion of the stomach in the chest, rapid distention of the stomach with gas under fluoroscopic observation by the use of a seidlitz powder (compound effervescing powder, U. S. P.) might prove or disprove this.

REPORT OF CASE, WITH DESCRIPTION OF THE METHOD

B. Y., a woman, aged 55, under treatment for mild diabetes, began to complain of marked weakness. She appeared paler than formerly and her hemoglobin was 70 per cent. Physical examination revealed no definite abnormality. On fluoroscopy of the chest, a linear shadow was seen just to the left of the left cardiac border and seemed to be separated from the heart by a narrow air space (fig. 1). Diaphragmatic hernia with a portion of the stomach behind and to the left of the heart was considered a possible explanation for this peculiar shadow. It was felt that, if gas could quickly be introduced into the stomaeh under fluoroscopic observation, the diagnosis of diaphragmatic hernia might be made. The simplest way of doing this was thought to be by the ingestion of an ordinary seidlitz powder. A seidlitz powder was mixed in the usual fashion and the patient was asked to swallow it quickly. Rather dramatically the "linear" shadow was seen to move up and to the left, owing to a marked increase in the air space between it and the heart (fig. 2). Roentgenograms with a contrast meal (fig. 3) later absolutely confirmed the diagnosis and revealed the upper two thirds of the stomach to be in the chest.

COMMENT

Diaphragmatic hernia in adults exhibits a clinical picture closely resembling organic disease of the stomach, gallbladder, heart, lungs and unexplained anemia, and unless kept in mind by the examiner it will be overlooked many times.

The successful application of the method described depends on the fact that in the majority of cases of diaphragmatic hernia a portion of the stomach protrudes through the diaphragm and into the chest.

It is hoped that, by the use of the simple method described, diaphragmatic hernia will be more frequently recognized. A careful search of the literature fails to reveal any reference to a similar procedure.

Better contrast may at times be obtained by having the patient swallow a portion of each dissolved powder (blue and white) separately, so that all the "gas" is generated in the stomach and not lost during "fizzing" of the mixed solution. This should be done only if the described method does not distend the stomach sufficiently, since there is supposed to be a certain element of danger in distending the stomach too rapidly.

975 Park Avenue.

SUBPHRENIC ABSCESS FOLLOWING TRAUMA

FRED R. HARPER, M.D., AND CHARLES A. THOMAS, M.D.,
TUCSON, ARIZONA

Ochsner and Graves[1] gathered 3,373 cases of subphrenic abscess from the world literature. Seventy-four (2.2 per cent) were attributed to trauma. The case we are reporting gave a definite clear-cut history of trauma resulting from an automobile accident. The injury occurred six weeks before the diagnosis of subphrenic abscess was made.

REPORT OF CASE

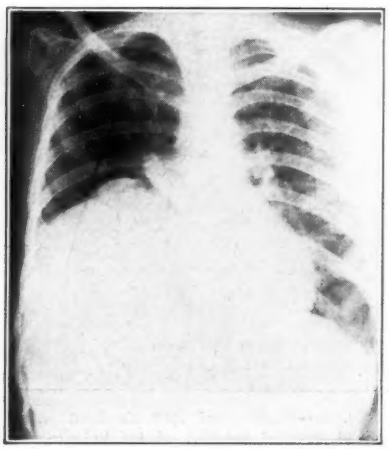
A man, aged 28, Mexican, a laborer, was well until he was injured in an automobile accident. At the time of the accident he was thrown from the car, striking the right side of his chest against the curbing. He was unconscious for about thirty minutes following the injury. The next day he went to work but had chills and fever, dyspnea, dizziness, and weakness accompanied by pain in his right side. He continued working for five days, during which time the symptoms persisted. For the next three weeks he remained at home in bed. His symptoms increased and an intense pain developed in the right upper quadrant. Except for a nonproductive cough and loss of appetite, he had no other significant symptoms.

From the Thomas-Davis Clinic.

1. Ochsner, Alton, and Graves, A. M.: Subphrenic Abscess, Ann. Surg. 98: 961-990 (Dec.) 1933.

Examination on admittance to the hospital revealed definite tenderness along the twelfth rib. Expansion of the right side of the chest was limited. There was impaired resonance and absence of breath sounds from the fifth rib to the base anteriorly and the ninth rib to the base posteriorly. The breath sounds at the right apex were increased. The left side of the chest was apparently normal. The patient's temperature was 103 F., pulse 100, and the respiration rate 30. The leukocyte count was 14,000. Roentgenograms of the chest revealed a dense opaque shadow in the right side of the chest extending to the level of the eighth rib. Aspiration at the level of the ninth rib was done and 270 cc. of straw-colored fluid obtained. Following the aspiration, the temperature went down to 99 for twelve hours and then returned to 104. Aspiration was again attempted and 85 cc. of fluid was withdrawn and 70 cc. of air introduced into the pleural cavity.

Roentgenograms taken following the introduction of air showed the right diaphragm to be definitely elevated to the level of the eighth rib. The diagnosis of subphrenic abscess was made, and the following day a retroperitoneal exploration according to the technic described by Ochsner and Graves was done. Under local anesthesia, the twelfth rib on the right side was removed and an incision 3 inches long made at right angles to the first lumbar vertebra. The peritoneum was separated from the diaphragm by blunt dissection. When the dome of the liver was reached, a large abscess cavity was encountered. The cavity was filled with thick pus and was so large that the dissector's whole hand seemed to drop down into an excavation of the liver. Two large rubber tube drains were placed in the abscess cavity and the ends brought out through the original incisions, where they were sutured in place. The third day following the operation the patient's temperature dropped to a maximum of 101. By the tenth day it was normal. The tubes were gradually removed over a period of five weeks, during which time the patient's temperature was normal. Culture of the fluid was sterile. No amebas were found, although careful search was made.



Elevation of diaphragm resulting from subphrenic abscess.

A NEW INSTRUMENT FOR THE INJECTION OF HEMORRHOIDS

T. B. QUIGLEY, M.D., BOSTON
Harvey Cushing Fellow in Surgery, Peter Bent Brigham Hospital

The treatment of hemorrhoids by the injection of a sclerosing solution has finally achieved respectability and has proved its worth in the alleviation of one of mankind's commonest and most annoying maladies. Experience has proved that injections will be successful only if made accurately and systematically after careful evaluation of the number, size and shape of the hemorrhoids and thorough examination of the rectal ampulla for other disease processes. Further, it is now agreed by most authorities that the optimal site of injection is at the apex of the hemorrhoid.[1] With most of the ordinary rectal speculums accurate injection and adequate inspection of the rectal mucosa is awkward and uncertain. To minimize these difficulties a new instrument was devised.[2]

A standard proctoscope was cut down to a length of 7.5 cm. and its end slightly beveled. Opposite the incandescent bulb a U-shaped slot was cut, 1.5 cm. in depth. At the base alongside the bulb terminals a piece of 0.6 mm. steel tubing was welded,

Fig. 1.—Instrument with the needle in place.

pointing in the direction of the U-shaped notch. A rubber cystoscope nipple was fitted to the projecting end of this tube.

With the patient in the Sims position the instrument, well lubricated, is inserted to its full length into the rectum. The obdurator is withdrawn and the nipple, previously sterilized by soaking in alcohol, is fitted to the projecting 0.6 mm. tube. The window is adjusted and the rectal ampulla distended with air and carefully inspected. The instrument is slowly withdrawn to the sphincter and the number and character of the hemorrhoids ascertained. The upper portion of the hemorrhoid

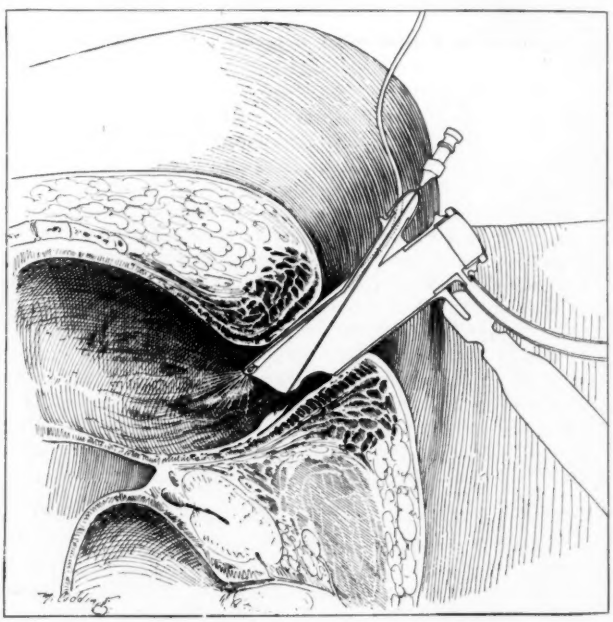


Fig. 2.—Diagram of the instrument in place. A bleb of injection fluid has been raised beneath the mucosa above a hemorrhoid.

From the Surgical Clinic, Peter Bent Brigham Hospital.

1. Kilbourne, N. J.: Internal Hemorrhoids: Comparative Value of Treatment by Operative and Injection Methods; a Survey of 62,910 Cases, Ann. Surg. **99:** 600-608 (April) 1934. Blanchard, C. E.: A Textbook of Ambulant Proctology, Youngstown, Ohio, Medical Success Press, 1928. Gabriel, W. B.: The Treatment of Hemorrhoids, Practitioner **126:** 114 (Jan.) 1931.

2. The original model was made by J. H. Emerson, 22 Cottage Park Ave., Cambridge, Mass. The instrument is manufactured by the George P. Pilling and Son Company, Philadelphia.

chosen for injection is allowed to slip into the U-shaped notch at the end of the instrument. The degree of projection of the hemorrhoid into the lumen of the instrument can be controlled by varying the amount of air in the rectum. A 12 cm. 22 gage needle is inserted through the nipple. The injection is then made accurately under direct vision either into or about the apex of the hemorrhoid, as the operator chooses.

This instrument has been in use for the last six months in the outdoor department of the Peter Bent Brigham Hospital. A solution of 5 per cent phenol in olive oil has been found satisfactory. From 2 to 4 cc. is injected beneath the mucosa above each hemorrhoid (fig. 1) and not more than three hemorrhoids are injected at one time.

SUMMARY

By means of a new instrument, accurate injection of internal hemorrhoids can be made at their apexes and examination of the anorectal mucosa can be carried out under direct vision.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT.

PAUL NICHOLAS LEECH, Secretary.

STANDARDIZATION AND LABELING OF LIVER AND STOMACH PREPARATIONS FOR USE IN THE TREATMENT OF PERNICIOUS ANEMIA

A Statement by the Council on Pharmacy and Chemistry

For some time it has been felt that the provisions for standardization and labeling of accepted liver and stomach preparations were inadequate. After extensive consideration the Council has arrived at the following statement, which sets forth the principles to govern its action in the consideration and acceptance of such preparations:

Investigation has demonstrated striking therapeutic effects from the feeding of liver or certain preparations of liver or of a preparation of stomach tissue in pernicious anemia and sprue when the bone marrow is not exhausted; also in certain cases of obscure anemia.

Preparations obtained from liver have also been used experimentally as a means of controlling essential hypertension and in certain eclamptic conditions. Thus far the Council has accepted only those preparations of liver primarily intended for the treatment of pernicious anemia.

Convincing evidence is now at hand that the daily ingestion of from 200 to 400 Gm. of fresh liver will induce and maintain a remission in pernicious anemia. It has also been shown that concentrates may be made from such amounts of liver, but these possess usually not more than two thirds of the original activity of the liver from which they are derived. Similar effects can be produced by 30 to 40 Gm. of desiccated stomach and by combinations of stomach tissue and liver. Extracts suitable for parenteral administration may be prepared from 10 to 15 Gm. of liver and will possess a therapeutic effect equal to that of the large amounts of liver given above.

Standardization of preparations depends on the reticulocyte response following the uniform daily administration of the product to a patient with pernicious anemia. The test patient should preferably have no complicating infection, diarrhea, marked arteriosclerosis or extensive neurologic changes. The red blood cell count should be between 1,000,000 and 3,000,000 per cubic millimeter and the patient should not be in a spontaneous or induced remission, nor should transfusion have been performed recently. The patient should not have received potent antianemic material or arsenic within a month. Daily reticulocyte counts for one day before and for ten days after the test has been started should be made. During days of marked rise of reticulocytes, two counts a day may be necessary to determine the maximal value. The acceptable standard response is set forth in the accompanying table.

Initial Red Blood Count Million per Cu. Mm.	Minimum Reticulocyte Response Per Cent
1.0	30
1.5	18
2.0	12
2.5	7
3.0	4

The figures given have been obtained by the daily oral administration of material derived from 300 to 400 Gm. of liver, or of 30 to 40 Gm. of desiccated stomach, or by the daily parenteral injection of material derived from 10 to 15 Gm. of liver.

The test should be conducted by uniform daily administration for ten days of the least amount of material expected to yield the standard reticulocyte response. Should there be no reticulocyte response or a lesser response than the required minimum, within the ten-day period, that amount of a preparation of established potency known to correspond to the foregoing standards should be administered in uniform dosage for ten days. The purpose of this control is to establish the reactivity of the patient to known amounts of active principle. In assaying an orally administered product an orally administered standard should be used, and with a product for parenteral use a parenterally administered standard should be employed. The principles underlying the determination of potency of autolyzed liver preparations, stomach tissue extracts or combinations of liver and stomach tissue or extracts are the same. In each case the least daily amount of the preparation administered that is necessary to produce the standard reticulocyte response within the ten-day period should be determined. Satisfactory responses to similar tests should be obtained in at least three patients.

The Council will require that all preparations designed for use in the treatment of pernicious anemia be manufactured by a satisfactory method and that they be labeled with the amount of the contained material which will produce the standard rise of reticulocytes when assayed in the manner defined. The manufacturers will be given ample opportunity to bring their products into conformity with the new standards.

SUGGESTIONS FOR LABELS

1. The daily oral administration of — Gm. of the material prepared by the method employed in producing the contents of this bottle (or vial) has been demonstrated to produce satisfactory hematopoietic response in pernicious anemia according to standards of the Council on Pharmacy and Chemistry.

2. The daily parenteral injection of — cc. of the contents of these ampules containing material prepared by the method employed in producing these contents has been demonstrated to produce satisfactory hematopoietic response in pernicious anemia according to standards of the Council on Pharmacy and Chemistry.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1935, p. 395).

Lederle Laboratories, Inc., Pearl River, N. Y.

Refined Diphtheria Toxoid (Alum Precipitated)-Lederle.—Also marketed in packages of one 0.5 cc. vial (one immunization), ten 0.5 cc. vials (ten immunizations), and one 5 cc. vial (ten immunizations).

SCARLET FEVER STREPTOCOCCUS ANTITOXIN (See New and Nonofficial Remedies, 1935, p. 373).

Lederle Laboratories, Inc., Pearl River, N. Y.

Scarlet Fever Streptococcus Antitoxin-Globulin-Lederle-Modified.—It is prepared by the method of Drs. Dick under U. S. patent 1,547,369 (July 28, 1925; expires 1942) by license of the Scarlet Fever Committee, Inc. The process of refinement is based chiefly on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin. As a result of this process, as much as 90 per cent of the coagulable protein may be digested, a smaller portion is precipitated, and the remainder, a pseudoglobulin fraction, is purified first by ordinary filtration and then by ultrafiltration and dialysis. Marketed in packages of one syringe containing 2,000 units (prophylactic dose), and in packages of one syringe containing 6,000 units (therapeutic dose).

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

HOYT'S GLUTEN SPECIAL FLOUR

Manufacturer.—The Pure Gluten Food Company, New York.

Description.—Ground gluten prepared from wheat flour by almost complete removal of starch, containing not more than 10 per cent of moisture and, calculated on the water-free basis, not less than 14.2 per cent of nitrogen, not more than 15 per cent of nitrogen-free extract (the protein factor 5.7 being used) and not more than 5.5 per cent of starch (as determined by the diastase method).

Uselessness as a Special Purpose Food.—Hoyt's Gluten Special Flour is manufactured specially for use in diets restricted in dextrose formers. To be eligible for acceptance, such type of flour shall contain dextrose formers yielding dextrose in an amount not greater than 3.3 Gm. per hundred cubic centimeters (the dextrose equivalence being computed as the carbohydrate, plus 58 per cent of the protein, plus 10 per cent of the fat content of the food). Dextrose formers of Hoyt's Gluten Special Flour, on the other hand, yield approximately 60 Gm. of dextrose per hundred cubic centimeters.

There is authoritative evidence that commercially prepared special diabetic foods are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. Artificial substitutes for ordinary foods are not to be favored; it is much better for the diabetic patient to learn how to plan his diet with foods in common use and readily available. The diet should be exactly prescribed in carbohydrate, protein and fat, and total calories.

The designation of a food as a "diabetic food" merely because it is low in carbohydrates is now unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Except for the necessity of restricting foods to avoid overstepping the food tolerance, there are no special diabetic nutritional requirements. The exploitation of starch-free or low carbohydrate foods containing an excess of protein for use by diabetic patients is unwarranted. Protein may be tolerated almost as poorly, if not quite as poorly, as starch in diabetes.

Because Hoyt's Gluten Special Flour is adjudged without usefulness or special adaptability for inclusion in diets restricted in dextrose formers, it will not be listed among the accepted foods of the Committee on Foods.

Gluten flours of other manufacturers, for the reasons stated, are not eligible for acceptance.

NOT ACCEPTABLE

LION BRAND VITAMIN D CREAM CHEESE

The Columbia Cheese Company, Newark, N. J., submitted to the Committee on Foods a cream cheese containing added vitamin D derived from cod liver oil, 400 U. S. P. vitamin D units per pound.

Discussion of Fortification with Vitamin D.—There is no convincing evidence from the standpoint of public health or the improved nutrition of the public of a need for the fortification of cream cheese or any type of cheese with vitamin D. It is nutritionally unreasonable to add vitamin D to foods consumed sporadically, such as cheese. An important requisite in the choice of food for incorporating vitamin D is that it be consumed regularly and in considerable quantity in the usual diet throughout the year. Cheese is an example of foods not warranting fortification with vitamin D.

The company was advised of the Committee's decision but has not demonstrated willingness to comply with its recommendations. This vitamin D fortified cream cheese will therefore not be listed among the accepted foods of the Committee.

NOT ACCEPTABLE

MALTCAO

The Merckens Chocolate Company, Inc., of Buffalo submitted to the Committee on Foods the product "Maltcao" prepared from sucrose, cocoa, dried malt extract and buttermilk, certain iron and calcium compounds derived from the "steepwater" of corn, and sodium chloride.

Analysis (submitted by manufacturer).—	per cent
Moisture	4.9
Ash	3.7
Sodium chloride	0.5
Fat (ether extract)	4.6
Protein (noncaffeine and nontheobromine N × 6.25)	8.9
Crude fiber	1.2
Carbohydrates other than crude fiber (by difference)	76.2
Theobromine (Wadsworth method)	0.37
Caffeine (Decker method)	0.13
Calcium (Ca)	0.41
Phosphorus (P)	0.64
Iron (Fe)	0.14

Discussion of Label and Advertising.—The label carries the statements "Builds for the years ahead . . . concentrated food drink rich in vital elements. In pleasant organic combination it supplies three necessary and body-building ingredients: iron, calcium, and phosphate. Maltcao aids the digestion of starchy foods. Maltcao for breakfast fits you for a busy, energetic day, and as a hot drink before retiring has a soothing, restful effect . . . especially recommended for nursing mothers, growing children, convalescents and the aged. Maltcao contains added organic compounds of calcium and iron, which are easily assimilated . . . Made from pure sugar, malt, cocoa, partially defatted milk and organic iron and calcium salts."

This product does not "build for the years ahead" any more than many other common foods of the diet. The statement "concentrated food drink rich in vital elements," because of vagueness, falsely implies unusual food values. Elements in which the product is "rich" should be specified. The emphasis on the "organic combination" of the iron, calcium and phosphorus incorrectly connotes that these elements in organic combination are more valuable than in inorganic combination. Inorganic calcium, iron and phosphorus compounds may be just as "easily assimilated" as the respective organic compounds of this product. There is no acceptable evidence that Maltcao will significantly aid in the "digestion of starchy foods." Saliva swallowed in eating is many times more potent for digesting starch than is the diastase of the malt extract ingredient. The statement "Specially recommended for nursing mothers, growing children, convalescents and the aged," because of vagueness, implies unusual nutritional or therapeutic values not possessed. Such claims, to be correctly informative, should specifically state the particular usefulness of the food for the classes of individuals named. The statement of ingredients is partly incorrect: malt extract, not malt, as stated, is an ingredient.

The advertising, in addition to the quoted label claims, contains such statements as "With health-building iron, calcium and phosphates. . . . This scientifically prepared health food . . . contains liberal quantities of organic phosphates of calcium and iron in the same form as nature produces these salts in small quantities in grains and vegetables. . . . Maltcao is therefore a near perfect food . . . the health-giving value is great because Maltcao supplements the calcium, iron and phosphate requirements of young and old. . . . In order to get lasting benefits from the use of Maltcao it is advisable to drink it regularly." Maltcao is no more a "health food" as stated and implied than many common foods of the usual diet. No food specifically can give or assure health. A complete, well balanced diet is but one of the many essentials necessary for health. The nutritional values of the calcium and iron are misrepresented by implication. It has not been shown that the calcium of Maltcao is more important nutritionally than the calcium of milk, or the iron than that of the common food wheat.

The label and advertising are misinformative and misleading. The company was advised of the Committee's criticisms but has not demonstrated, after approximately a one year interval, that action has been taken to revise the label and advertising that they may correctly and properly inform the public. This product will therefore not be listed among the accepted foods of the Committee.

NOT ACCEPTABLE

DRY PEPTONOIDS (SOLUBLE) BEEF, MILK AND WHEAT PREDIGESTED

Manufacturer.—The Arlington Chemical Company, Yonkers, N. Y.

Description.—Dried extract of partially digested beef, skim milk and wheat bran admixed with malt extract and milk sugar.

Manufacture.—Beef, trimmed of excess fat, is chopped, heated to boiling in dilute hydrochloric acid solution, cooled and digested with pepsin. Wheat bran is cooked in boiling water, cooled, and malt extract is added. After inversion of the starch, the wheat bran mixture is added to the meat mixture, and the acid pepsin digestion continued.

In a separate tank, the dry skim milk powder is suspended in water, soda is added to adjust the solution to the desired p_H, the temperature is adjusted, and pancreatin is added. After a definite digestion period, this mixture is added to the meat-wheat-bran mixture. During the mixing, the p_H is altered and the digestion of the combined mixtures with pancreatin continued.

After the digestion period, the mixture is acidified, heated to boiling, and filtered. The press cake is washed and the filtrate and washings are concentrated in vacuum. The washed press cake is returned to the digestion tank and subjected to a second digestion with pancreatin. The second filtrate is treated as the first, concentrated in vacuum and added to the first concentrate. The mixture is tested for nitrogen and total solids, and the necessary quantity of milk sugar is added so that the finished product contains 40 per cent of protein (N × 6.25). The syrupy mass is spread on trays and dried in vacuum, sieved and packed in glass containers.

Analysis (submitted by manufacturer).—	per cent
Moisture	6.1
Ash	8.4
Fat (ether extract)	0.03
Protein (N × 6.25)	40.2
Average nitrogen content	6.4
Amino nitrogen (Van Slyke method)	0.5
Carbohydrates (lactose, dextrose and maltose) (by difference)	45.3

Discussion of Name and Label.—The name "Peptonoids" is inappropriate for this product containing a larger percentage of carbohydrates than what may be regarded as "peptonoids." The main panel legend "Beef, Milk and Wheat Predigested" is incorrect. The product is not "predigested." Skim milk and not milk and only part of the wheat (apparently commercial wheat bran) are used. A more appropriate descriptive statement would be "Dried extract of partially digested skim milk, beef and wheat bran admixed with malt extract and lactose." Evidence has not been furnished that the product is "sterilized" as claimed. The article does not contain "all of the nutritive principles of beef, milk and wheat, except the fat" as claimed.

Uselessness as a Special Purpose Food.—The label and advertising present Dry Peptonoids as a "Special Purpose Food," as indicated by such statements as "Predigested . . . a concentrated food of decided nutritive value containing 40 per cent protein in partially digested, freely soluble and readily assimilable form, obtained from the flesh-forming nitrogenous principles of beef, milk and wheat, together with their completely converted, promptly absorbable carbohydrates and nutritive salts . . . contains all of the nutritive principles of beef, milk and wheat, except the fat, predigested by pepsin and pancreatin . . . absolutely free from unconverted starch or indigestible material . . . peculiarly valuable and acceptable in all conditions requiring nutritive reinforcement . . . no cane sugar . . . clinical advantages . . . practical freedom from creatin, creatinin, purin bodies . . . Dry Peptonoids (Soluble) is indicated in those cases where a maximum amount of nutrition is required in a minimum amount of bulk. It will be found useful in cases of gastric ulcer, cancer, vomiting during pregnancy, nervous dyspepsia, gastritis, during period of lactation or whenever the presence of ordinary food in the stomach, even water, causes irritation or nausea . . . Rectal feeding—Dry Peptonoids (Soluble) is of especial value for rectal feeding because it is concentrated, nutritious and is rapidly absorbed without causing irritation."

Dry Peptonoids formerly was considered useful for persons who because of disease are unable to eat regular foods without distress. At this time, however, the food seems to have no field of usefulness, either as a regular food or as a special purpose food. Therefore Dry Peptonoids will not be listed among the accepted foods of the Committee on Foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

McCORMICK'S BEE BRAND PUMPKIN PIE SPICE

Manufacturer.—McCormick & Company, Inc., Baltimore.

Description.—Ground mixture of allspice, saigon cinnamon, ginger, cloves and nutmeg.

Manufacture.—Ingredients, prepared as described for McCormick's Bee Brand Allspice (THE JOURNAL, Oct. 28, 1933, p. 1393) are mixed in formula proportions and automatically packed.

Analysis (submitted by manufacturer).—	per cent
Moisture	8.1
Total ash	4.5
Ash insoluble in hydrochloric acid	0.2
Volatile ether extract	5.2
Nonvolatile ether extract	8.0
Protein (N × 6.25)	6.3
Starch	13.4
Crude fiber	16.1
Carbohydrates other than crude fiber (by difference)	51.8

BOB WHITE BRAND FANCY TABLE SYRUP CRYSTAL WHITE

Manufacturer.—The Torbitt & Castleman Company, Inc., Louisville, Ky.

Description.—Table syrup; a blend of corn syrup (90 per cent) and sucrose syrup (10 per cent), flavored with vanilla.

Manufacture.—The corn syrup ingredient is manufactured by essentially the same procedure as described in THE JOURNAL, March 5, 1932, page 817. Sucrose syrup and corn syrup in the stated proportions are heated to 70 C., imitation vanilla flavor is added, and the mix is automatically packed hot in cans.

Analysis (submitted by manufacturer).—	per cent
Moisture	25.3
Ash	0.2
Fat (ether extract)	0.0
Protein (N × 6.25)	0.1
Reducing sugars as dextrose	30.4
Sucrose	10.2
Dextrins (by difference)	33.3
Titratable acidity as HCl	0.01
Sulphur dioxide as SO_2	0.001
p_H	5.1

(No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.)

Calories.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

FAIRWAY BRAND FREE RUNNING SALT

Distributor.—Twin City Wholesale Grocer Company, St. Paul.

Manufacturer.—The Ohio Salt Company, Wadsworth, Ohio.

Description.—Table salt containing added magnesium carbonate (1 per cent) for preserving free-running properties; the same as Chippewa Free Running Salt (THE JOURNAL, Sept. 7, 1935, p. 800).

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SATURDAY, OCTOBER 19, 1935

YELLOW FEVER STUDIES

A series of studies [1] emanating from the Cooperative Yellow Fever Service maintained by the National Department of Health of Brazil and the International Health Division of the Rockefeller Foundation has developed several new observations and problems connected with yellow fever control. In studying the distribution of immunity to yellow fever in Brazil [1a] by means of complement fixation tests on blood samples, a significant difference was found between the percentage of positive reactions in postepidemic samples and in samples from a nonendemic area. This difference was indicated further by the results of interval tests on the same persons, and by the combined results of complement fixation and protection tests. At the time of known outbreaks of yellow fever, relatively large percentages of the local population were apparently acquiring a specific immunity to the yellow fever virus without apparent attacks of the disease.

The study of a strictly rural epidemic of yellow fever occurring in the Valle do Chanaan, Esperito Santo, Brazil,[2] showed that Aedes aegypti could be definitely ruled out as the vector. This changes many ideas previously held. This valley, or series of valleys, is formed by the Rio Santa Maria do Rio Doce and its tributaries, where a mountain range falls away from Santa Thereza toward the Rio Doce. It is a heavily populated rural area without any villages or towns of importance. This region, whose name is as picturesque as its geography, had been considered an unlikely yellow fever area. On March 3, 1932, however, a suspected case was reported which proved to be fatal and was followed by necropsy confirmation of the diagnosis. Immediate investigation allowed the collection of information regarding eighty-three suspected cases with nine fatalities between January 15 and April 15, scattered over an area of some 50 square kilometers. The epidemic was apparently on the decline when it was discovered, and only twenty-one cases, with three deaths, were observed after the appearance of the first suspected case. The apparent low mortality of yellow fever in a population, predominantly white and largely composed of European stocks, recently established in this area, emphasizes the fact that other factors than race are important in determining susceptibility to yellow fever. Added evidence of this situation was adduced from the occurrence of a fatal case in a man, aged 72, a resident in the Valle do Chanaan for fifty-five years. Furthermore, the results of mouse protection tests in the valley showed a surprisingly low percentage of immune persons, considering the wide geographic distribution of immunity and the fact that the disease apparently disappeared spontaneously. The situation suggests a transmission by some insect vector having high laboratory but low natural efficiency, perhaps because of less contact with the human host than Aedes aegypti has.

Inspectors failed to find Aedes aegypti breeding in the Valle do Chanaan or in the town of Santa Thereza. Several factors are probably responsible for this absence. Many other insects were, however, found in this district. Of these, Aedes fluviatilis, A. scapularis, A. serratus, A. terrens, Mansonia (all species), Psorophora (all species) and Phlebotomus (all species) were held for further consideration as possible vectors. While the guilty vector or vectors of this epidemic have not been established, the epidemiologic evidence indicates that they are not house limited mosquitoes. It points rather to infections occurring in the field, and to the possible transfer of infections from one house to another by the vector as well as by the human host.

These observations, combined with other exceptions to preconceived ideas of the action of yellow fever, led to further investigations.[3] The possibility of determining, through the examination of necropsy material from a large number of fatal febrile cases, the location of those silent foci of yellow fever responsible for maintaining the endemicity of the disease in the northern part of Brazil was discussed during 1928 and 1929 but no serious attempt was made at the routine collection of specimens previous to April 1930. The collection of such specimens was simplified by the use of a special viscerotome with which sufficient liver tissue for diagnostic purposes is readily obtained. Of the seventy-five diagnoses of yellow fever made by the Bahia laboratory on routine liver specimens collected

1. These studies include:
(*a*) Soper, F. L.; Frobisher, M., Jr.; Kerr, J. A., and Davis, N. C.: Studies of the Distribution of Immunity to Yellow Fever in Brazil, J. Prev. Med. **6**: 341 (Sept.) 1932.
(*b*) Soper, F. L.; Penna, H.; Cardoso, E.; Serafim, J., Jr.; Frobisher, M., Jr., and Pinheiro, J.: Yellow Fever Without Aedes Aegypti: Study of a Rural Epidemic in the Valle do Chanaan, Esperito Santo, Brazil, 1932, Am. J. Hyg. **18**: 555 (Nov.) 1933.
(*c*) Soper, F. L.: Some Notes on the Epidemiology of Yellow Fever in Brazil, Rev. de hyg. e saude pub. **8**: 37 (Feb.) 1934.
(*d*) Soper, F. L.; Rickard, E. R., and Crawford, P. J.: The Routine Postmortem Removal of Liver Tissue from Rapidly Fatal Fever Cases for the Discovery of Silent Yellow Fever Foci, Am. J. Hyg. **19**: 549 (May) 1934.
(*e*) Davis, N. C.: The Microscopical Examination of 29,593 Human Livers from Central and Northern Brazil, with Special Reference to the Occurrence of Malaria and Schistosomiasis, Am. J. Hyg. **19**: 567 (May) 1934.
(*f*) Soper, F. L.: Rural and Jungle Yellow Fever a New Public Health Problem in Colombia, Rev. de hig. **4** (May and June) 1935.
2. Soper, Penna, Cardoso, Serafim, Frobisher and Pinheiro;[1b] Soper.[1c]

3. Soper, Rickard and Crawford;[1d] Davis.[1e]

in this way, only twenty-one were made on tissues from cases clinically suspected of yellow fever. Fifty-four occurred from forty-three places in which yellow fever was not known to be present, thus amply confirming the hoped for value of the procedure.

It was not wholly surprising that the liver specimens gave additional information. Thus of the 29,593 specimens, 2,298 showed malarial pigmentation. Lesions caused by Schistosoma Mansoni were recognized in 1,594 livers. Lesions of typhoid and focal necroses of doubtful etiology were especially prevalent among specimens from one region (Ceará).

In the light of present knowledge yellow fever must be recognized as an international problem. Soper [1c] advances a five-point program of study. There should be antilarval services in all principal cities and in all ports in tropical America. Protection test surveys should be made to outline the recent distribution of yellow fever. There should be routine collection and examination of liver specimens in rapidly fatal febrile cases from all parts of possibly epidemic areas. A careful study is advisable of all places shown to be infected by the examination of liver tissue, with especial reference to the possibility of vectors other than Aedes aegypti and of vertebrate hosts other than man. Finally, antilarval services should be introduced in all towns and villages in and about known infected areas.

THE DEBATE ON STATE MEDICINE

This year the extension divisions and departments of speech of a considerable number of universities and colleges as well as the debating associations of the high schools and similar institutions in many states have chosen as their topic "Resolved, That the several states should enact legislation providing for a system of complete medical service available to all citizens at public expense." Since the announcement of this subject, the headquarters office of the American Medical Association and the offices of many state medical associations have been almost overwhelmed with requests for material, particularly on the negative side of this subject. The Bureau of Medical Economics of the American Medical Association has prepared a large number of pamphlets, which are available without cost to those who require them in these discussions. A tremendous number of these pamphlets have already been sent to many parts of the United States. In addition, debaters' handbooks have been prepared by several organizations, presumably with a view to presenting both sides of the subject adequately and thus being useful to the debaters on both the affirmative and the negative side. The headquarters office and the officials of the American Medical Association have cooperated with those preparing these handbooks, making available for the debaters the point of view of organized medicine.

An analysis of these debaters' manuals brings out some interesting facts. The one prepared by Julia E. Johnsen [1] on "Socialization of Medicine," circulated by the H. W. Wilson Company, provides good outlines on both the affirmative and the negative side and then presents a general discussion and affirmative and negative references. The general discussion, which occupies 177 pages, is entirely devoted to articles by persons who are known to be proponents of compulsory health insurance. The negative references include articles by John A. Kingsbury and Rufus Rorem, who certainly would not be considered favorable to the point of view of the medical profession.

The Ninth Annual Debate Handbook,[2] edited by Bower Aly, includes two volumes. In volume I, 112 pages are devoted to the affirmative and fifty-eight pages to the negative; twenty-one pages are presumably impartial. In volume II, ninety-seven pages are devoted to the affirmative and sixty-two to the negative, with sixteen apparently impartial. Incidentally, this volume and all the others indicate that the American College of Surgeons favors compulsory sickness insurance, notwithstanding the fact that the governors of the college have specifically denied this allegation.

The third volume available for the debaters is entitled "Free Medical Care," [3] and is compiled and edited by E. C. Buehler. This volume also would seem to make available far more material on the affirmative than on the negative side, including much the same material that is contained in the Aly handbook. This volume, however, would seem to have developed a better bibliography and a better selection of material than is found in the others mentioned.

On November 12, at 2 o'clock eastern time, a trial debate is to be held over the network of the National Broadcasting Company. For the affirmative the speakers are William T. Foster and Bower Aly. Mr. Aly, it will be remembered, is the man who prepared the handbook already mentioned. For the negative the speakers are Dr. R. G. Leland, director of the Bureau of Medical Economics of the American Medical Association, and Dr. Morris Fishbein, editor of THE JOURNAL.

Physicians should recognize the exceeding significance of these debates and their effect on the American public. President Roosevelt has said, at least so Mr. Moley affirms, that there will be no attempt at a program of compulsory health insurance until public sentiment has crystallized in that direction. In the crystallization of public sentiment much will depend on this nation-wide series of debates, which will influence not only the minds of the adults of the next generation but those of hundreds of thousands of persons who will listen to the debates as they are publicly presented in innumerable villages, towns and cities. Physicians will

1. Johnsen, Julia E.: Socialization of Medicine (The Reference Shelf, vol. 10, number 5), New York, H. W. Wilson Company, 1935; 90 cents.
2. Socialized Medicine: The Ninth Annual Debate Handbook—1935-1936, vols. I and II, Edited by Bower Aly, Columbia, Mo., Lucas Brothers, 1935.
3. Buehler, E. C.: Free Medical Care (Debater's Help Book, vol. II), New York, Noble & Noble, 1935.

do well to give all the aid they possibly can give to young men and women who are participating in these debates and who come to them for help and advice. The American Medical Association will gladly send to any physician, on request, pamphlets and other material listed below, which may be used by the physician for his own information and which may be given to the debaters to aid them in the preparation of their discussions.[4]

TRANSPORT OF CARBON DIOXIDE BY THE BLOOD

According to the theory that has prevailed since 1928, carbon dioxide is transported by the blood chiefly in the form of bicarbonate in the cells and plasma and is released in the lungs largely as a result of the chemical decomposition of this compound. However, as pointed out in a recent review,[1] further experimental work conducted during the last few years has shown that not all the facts are satisfactorily explained by this hypothesis. First, the liberation of carbon dioxide in the lungs is far too rapid to be attributed to a simple release of the gas from bicarbonate; this process would involve the dehydration of the intermediary product, carbonic acid, a reaction known to proceed too slowly to occur in the short interval of time, probably one second or less, required for the erythrocyte to traverse the length of the pulmonary capillary. Furthermore, the "1928 theory" does not take into consideration the presence and possible physiologic significance of bound carbon dioxide in forms other than carbonic acid and bicarbonate.

Critical consideration of these points has developed chiefly as a result of the observation in 1928 that the release of carbon dioxide from serum alone was extremely slow, whereas, on the addition of erythrocytes, the process was rapid.[2] Two possible explanations of the phenomenon were suggested: that some substance was present in the red cells which catalyzed the dehydration of carbonic acid and hence the liberation of carbon dioxide from bicarbonate, or that some rapidly dissociable compound of carbon dioxide, probably with hemoglobin itself, was present in the erythrocyte. Subsequent investigations, chiefly those of a group of English physiologists,[1] have supported both these explanations. Indeed, an active catalyst for the dehydration of carbonic acid has been obtained from erythrocytes and has been purified to 2,000 times its original activity. The purest preparations[3] exhibited certain physical and chemical properties characteristic of the group of organic catalysts, the enzymes. They gave the usual protein tests and were thermolabile, nondialyzable, sensitive to p_H changes, and inactivated by the salts of heavy metals and by cyanide. Because of its action in removing water from carbonic acid to yield carbon dioxide, this enzyme has been named "carbonic anhydrase." It has been estimated that this enzyme speeds up the rate of liberation of carbon dioxide in the lungs at least 150 times.

The second explanation suggested by Henriques, that some readily dissociable compound of carbon dioxide, probably with hemoglobin, exists in the erythrocyte, received definite support by the observation[4] that carbon dioxide is liberated at a considerably faster rate from whole blood treated with cyanide, to abolish the effect of carbon anhydrase, than from serum alone. The fact that the carbon dioxide was bound to hemoglobin was suggested by the observation that the compound was affected reversibly by oxygenation and reduction. Further experiments with purified hemoglobin equilibrated against carbon dioxide under physiologic conditions of temperature and p_H substantiated this belief. The amounts of carbon dioxide bound were affected by oxygenation and reduction as before and varied directly with the concentration of hemoglobin in the solution. Additional work indicated that the carbon dioxide was bound to hemoglobin by a carbamino type of linkage. This compound has been named "carbhemoglobin," a term suggested by Bohr in 1909. According to the calculations of the English investigators,[1] although only 5 to 10 per cent of the total carbon dioxide of the blood is bound to hemoglobin, carbhemoglobin is responsible for approximately 20 per cent of the gas actually freed in the lungs because of the completeness and rapidity with which this compound releases carbon dioxide. Recent preliminary data[1] have indicated that some carbon dioxide also may be bound to hemoglobin as bicarbonate.

If the active participation of the enzyme carbonic anhydrase and the compound carbhemoglobin in the transport and exchange of carbon dioxide as herein described is adequately confirmed, a new concept of

4. Material for distribution to students on the socialization of medicine:
For free distribution:
1. Some Defects in Insurance Propaganda.
2. A Critical Analysis of Sickness Insurance.
3. Sickness Insurance Not the Remedy.
4. Sickness Insurance Catechism.

Obtainable from the American Medical Association:

1. An Introduction to Medical Economics	15 cents
2. A Handbook of Sickness Insurance, State Medicine, and the Costs of Medical Care	40 cents
3. Collecting Medical Fees	10 cents
4. Contract Practice	10 cents
5. The Cost of a Medical Education	10 cents
6. Income from Medical Practice (with supplement)	15 cents
7. Some Phases of Contract Practice	10 cents
8. Medical Relations Under Workmen's Compensation	75 cents
9. Group Practice	15 cents
10. New Forms of Medical Practice	15 cents
11. Health Insurance in England and Medical Society Plans in the United States	5 cents
12. Prepayment Plans for Hospital Care	5 cents
13. Group Hospitalization Contracts are Insurance Contracts	10 cents
14. Care of the Indigent Sick	50 cents
15. Distribution of Physicians in the United States	50 cents

1. Roughton, F. J. W.: Recent Work on Carbon Dioxide Transport by the Blood, Physiol. Rev. **15**: 241 (April) 1935.

2. Henriques, O. M.: Die Bindungsweise des Kohlendioxyds im Blute, Biochem. Ztschr. **200**: 1 (Sept. 30) 1928.

3. Meldrum, N. U., and Roughton, F. J. W.: Carbonic Anhydrase: Its Preparation and Properties, J. Physiol. **80**: 113 (Dec.) 1933.

4. Meldrum, N. U., and Roughton, F. J. W.: The State of Carbon Dioxide in Blood, J. Physiol. **80**: 143 (Dec.) 1933. Ferguson, J. K. W., and Roughton, F. J. W.: The Direct Chemical Estimation of Carbamino Compounds of Carbon Dioxide with Hemoglobin, ibid. **83**: 68 (Dec.) 1934; The Chemical Relationships and Physiological Importance of Carbamino Compounds of Carbon Dioxide with Hemoglobin, ibid. p. 87.

this mechanism, similar to that recently suggested,[1] must be drawn. Perhaps the recent developments in this field will serve to initiate "a revolution in the chemistry of carbon dioxide transport."

Current Comment

INFANTILE PARALYSIS VACCINES

The most sensational feature of the scientific discussions at the meeting of the American Public Health Association, held in Milwaukee last week, was the presentation of papers and discussions of these papers on vaccines used for immunization against poliomyelitis. The vaccines now before the medical profession include those of Kolmer and of Brodie. Significant contributions on the development of these vaccines by these investigators have appeared from time to time in THE JOURNAL. After the investigators had presented the results of their observations, the value of these preparations was strongly deprecated in discussions in which Rivers of the Rockefeller Institute and Leake of the United States Public Health Service participated. Thus Rivers asserted, and in his contention Leake participated, that the Kolmer vaccine was dangerous because of the presence of free virus and that the Brodie vaccine was without demonstrated value and theoretically could not be of value. It must be remembered that monkeys have previously been injected with subinfective amounts of living virulent virus and yet not immunized against a fatal dose of virus. Moreover, it has been contended that, in some of the patients who developed infantile paralysis following the use of the Kolmer method, the paralysis was due to the free virus in the vaccine. To this Kolmer replies that the time of inoculation was too long after the exposure to permit any one to know whether or not the infantile paralysis was primary or associated in any way with the injection of the vaccine. Certainly more experimentation and clinical evidence must be made available before any one can say whether or not either of these preparations has real value in the prevention of infantile paralysis.

THE TREND IN DEVELOPMENT OF PUBLIC HEALTH SERVICE

In view of the lavish appropriations of money to be expended by and distributed among public health officials, recently authorized by our federal government, the trend toward acceptance of state control of medical care among these officials is not surprising. For years both physicians and public health officials have urged greater appropriations for public health. They now find themselves in the position of a starving man suddenly seated at a ten-course banquet. There is too much food for possible digestion and the end result is certain to be a "stomach ache." It is no secret that health officers in high positions are in a dilemma as to the disposition of the money now to be showered on them. Neither the personnel nor the projects have been developed for suitable spending of these appropriations. The announcement has been made that a survey of 750,000 families is to be conducted by the United States Public Health Service to determine the status of their health and the care given to them in disease. Yet the opinion has already been ventured by the assistant secretary of the treasury in charge of the United States Public Health Service that the answer to this survey is apparent. It is said that evidence is available to indicate that a large number of the population are not receiving adequate medical care and that great numbers of those on relief were also given inadequate medical service. This statement coming from the official responsible for the survey and in advance of the time when the survey is to be conducted offers at least the suspicion that the project is not wholly a scientific venture. Is it perhaps a means of giving employment to 30,000 unemployed that makes it appeal primarily to federal officials or is it intended as propaganda leading toward bureaucratic and state medicine? The medical profession will view the progress of the survey somewhat warily. Such an experiment should certainly be analyzed as to its significance and its control.

Medical Economics

THREE CENTS A DAY FOR HOSPITAL INSURANCE IN NEW YORK CITY

WALTER T. DANNREUTHER, M.D.
Vice President and Director, Associated Hospital Service of New York
NEW YORK

At the 1933 meeting of the Medical Society of the State of New York, a special committee on the costs of medical care, of which Dr. Arthur W. Booth was chairman, presented a report to the house of delegates recommending the adoption of seven specific propositions. This report was unanimously accepted and has been the responsible factor for several constructive efforts on the part of the local medical profession to lessen the costs of medical care for patients of moderate means, as well as to provide for adequate compensation for the physician under all circumstances. Proposition 3 of the Booth report read as follows:

> There is in every community a group of people below the "comfort level," on whom the costs of medical care impose a heavy burden. These are self-respecting people of the salaried class in most instances, whose living expenses are met from their weekly earnings. For them the greater part of medical costs comprise charges for hospital and nursing care.
>
> To lessen the burden of hospital and nursing care for this wage-earning group, your committee recommends the adoption generally of a plan of hospital insurance whose principles may be stated as follows:
>
> (*a*) Members of employed groups may receive for the payment of a small annual sum hospital care in semiprivate accommodations for a period of twenty-one days in any one year, such care to include bed and board, general nursing service, x-ray and laboratory examinations.
>
> (*b*) All reputable voluntary hospitals and some proprietary hospitals shall be entitled to participate in this plan.
>
> (*c*) Except in emergencies, all admissions of patients cared for under this plan must be made through the patient's personal physician.
>
> (*d*) Certificates of membership issued to subscribers shall state specifically that the service does not cover the fee of the patient's physician.
>
> (*e*) In each community under the supervision of its organized medical group there shall be developed the details of this plan so as to meet local conditions and make it workable.

The United Hospital Fund of New York, which includes in its membership fifty-five of the largest voluntary hospitals in Greater New York, thereupon assumed the responsibility of creating the necessary corporation to provide for the practical application of these principles but found that it could not do so without the enactment of special legislation, because of existing insurance laws. A bill, known as the O'Brien bill,

Assembly Introductory No. 1710, to amend the insurance law and the membership corporation law, in relation to nonprofit hospital service plans, was introduced and quickly passed during the 1934 session of the New York State Legislature. Two important provisions of this bill are:

> At least a majority of the directors of such corporation must be at all times directors or trustees of hospitals designated in section four hundred and fifty-two of this article which have contracted or may contract with such corporation to render to its subscribers hospital service.
>
> Any corporation subject to the provisions of this article may enter into contracts for the rendering of hospital service to any of its subscribers only with hospitals maintained by the state or any of its political subdivisions, or maintaind by a corporation organized for hospital purposes under the laws of this state, or such other hospitals as shall be designated by the state department of social welfare for such purpose.

Immediately after the enactment of the O'Brien bill the United Hospital Fund sponsored the incorporation of the Associated Hospital Service of New York, which includes in its voting membership:

> All the trustees of the United Hospital Fund of New York.
> President of the Hospital Conference of the City of New York.
> President of the Medical Society of the State of New York.
> President of the Medical Society of the County of New York.
> President of the Medical Society of the County of Kings.
> President of the Medical Society of the County of Queens.
> President of the Bronx County Medical Society.
> President of the Medical Society of the County of Richmond.
> President of the New York Academy of Medicine.
> President of the Brooklyn Hospital Council.

In October 1934 the Coordinating Council of the Five County Medical Societies of Greater New York, which is composed of three officers from each county society, including its president, was requested to designate one of its members to represent organized medicine on the board of directors of the new corporation. The writer, then president of the Medical Society of the County of New York, was elected to this position and is the only physician on the board of eleven directors. While the plans for the details of the contracts with both hospitals and patients were being formulated, I insisted first that the recommendations of the Booth report be rigidly followed; secondly, that the existing relationship between physician and patient remain undisturbed; thirdly, that none of the provisions of the contracts should alter the relationship of the physician to his hospital; and, fourthly, that all proprietary hospitals in the city that could conform with certain standards for private institutions set up by the commissioner of hospitals, and then secure the endorsement of the state department of social welfare, be invited to participate in the operation of the plan. Some safeguard, such as the last, is essential in a large city in which many hospitals are "closed"; otherwise, physicians who are not staff members of the larger institutions would suffer an injustice and would find themselves tremendously handicapped in hospitalizing insured people. It is a pleasure to record the sympathetic attitude of the other members of the board of directors to these principles throughout all the preliminary negotiations, as well as the fact that the contracts in their final form do not violate any of the objectives of organized medicine in a single particular.

The insurance plan of the Associated Hospital Service of New York is quite similar to those of other organizations which have been functioning successfully in various cities in Texas, in Newark, N. J., and elsewhere. The cost to the subscriber is $10 a year or 90 cents a month. Reducing the premium rate to its per diem cost suggested the slogan "hospital service when you need it for three cents a day." This hospital plan is an application of the group insurance principle. A minimum of ten persons constitute a group, and at least five of them must have been employed for the previous thirty days. Each one must subscribe to a statement that he or she is in normal health and is less than 65 years of age. There are no occupational restrictions or salary limitations. Within the first six months the Associated Hospital Service of New York has insured 20,000 persons.

The insurance policy offers hospital care for twenty-one days in semiprivate accommodations, in one or more admissions, general nursing care, routine laboratory examinations, ordinary roentgenograms, use of operating room, use of delivery room (only after ten months' membership), routine medications and dressings, and general anesthesia (when such service is supplied by salaried employees of the hospital). If the patient wishes to occupy a private room, he may do so only with the consent of the physician or surgeon. The plan provides for a discount of 25 per cent off regular hospital charges beyond the period of twenty-one days and allows a credit of $4.50 a day on the price of a private room, if one is preferred to the semiprivate accommodations. The benefits are available immediately in cases of accident or emergency illness, and after ten days from the date of the first subscription payment for other illness, except pulmonary tuberculosis, venereal diseases, hospital care provided for under workmen's compensation laws, quarantinable diseases and mental disorders. When on vacation or other travel outside a fifty mile radius of New York, the insured individuals are entitled to benefits in case of accident or emergency illness. The benefits do not include hospital admission of ambulatory patients for laboratory or roentgen examinations, solely for diagnostic purposes.

The charges made by the patient's physician or surgeon or by special private nurses are not included. Although a patient can be admitted to a hospital only when referred to it by a physician, the plan does not confer staff privileges on any physician which he does not already enjoy.

Up to the present time about 146 hospitals in the New York area, including twenty proprietary institutions, have agreed to accept patients insured by the Associated Hospital Service. As it is a nonprofit organization, all the funds received from premiums are available for hospital distribution, except for modest office expenses, a small pay-roll, and the setting up of reasonable reserves. The hospitals agree to accept patients at a minimum rate of $6 a day, but there are good prospects of this being increased to $7 or $8 in the near future. Either the hospital or the Associated Hospital Service may cancel the contract on thirty days' notice.

Experience with a similar plan in Newark, N. J., has demonstrated that 7 per cent of the insured individuals enter hospitals each year, that 21 per cent of these occupy private rooms, that 16 per cent have roentgen examinations and that 72 per cent are surgical, 22 per cent medical and 6 per cent accident cases. The plan has paid for one hospital day for every sixteen member months since it has been in operation.

The subscription agreement with any individual may be terminated by either party by giving twenty days' prior notice, provided a subscriber shall not then be applying or receiving hospital care.

There are two reasons for not fixing a low or upper salary limit of eligibility. First, because a subscriber might lose his employment or be promoted to a more remunerative position during an insurance year, thus changing his financial status, and secondly because it allows persons on different wage levels to organize a group. The omission of the physician's fee from the hospital insurance plan is really of advantage, as its inclusion would necessarily complicate matters and involve the adoption of a fee schedule. Since no fee schedule is applicable, the earning capacity of the subscriber can be the sole guide in making charges for professional services.

No patient is admitted to a hospital unless referred to it by a physician, and no hospital can select a physician for a subscriber. In fact, there is no special reason why a physician or surgeon should be aware of his patient's hospital insurance until after he has advised him or her to enter the hospital and made his private financial arrangements for his professional fees. A physician is of course under no obligation to render service to a patient who cannot afford to pay for it. The

patient selects the physician and the physician chooses the participating member hospital. There can be no interference from the employer.

The Associated Hospital Insurance plan has apparently won the approval of the local medical profession. The only complaint against the provisions of the contracts have come from the roentgenologists, who contend that it is impossible to define ordinary roentgenograms and who have been fearful that a few institutions may attempt to deprive the roentgenologist of his just due for his services rendered to insured patients. The inclusion of roentgen examinations conforms with the dictum of organized medicine as expressed in the Booth report. It must be remembered that the Associated Hospital Service can terminate the agreement with any hospital after thirty days' notice, and the corporation realizes its obligation to the roentgenologist as well as to the institution. Should any hospital violate the good faith of the agreement at the expense of a physician, roentgenologist or otherwise, the board of directors can strike it from the list of participating member hospitals.

A voluntary hospital insurance plan for people of moderate means which functions successfully should eliminate the demand for compulsory health insurance and stop the reintroduction of vicious sociological bills in the state legislature year after year. It should minimize the tendency of the low wage earner to pauperism and make the collection of doctors' bills from employed persons much easier.

580 Park Avenue.

Association News

RADIO BROADCASTS

The American Medical Association broadcasts over the Blue network of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The next three programs are as follows:

October 22. Asphyxiation, W. W. Bauer, M.D.
October 29. Poisonous Plants and Insects, W. W. Bauer, M.D.
November 5. Hemorrhage, Morris Fishbein, M.D.

This program is broadcast also on the short waves through KDKA, Pittsburgh, over station W8XK, 11,870 and 15,210 kilocycles.

The Purpose of Menstruation.—From this standpoint the endometrium is a very optimistic tissue indeed, preparing month after month, in every woman whether single or married, for a possible pregnancy, with most frequently frustration of this hope and the occurrence of menstruation. This, after all, is the underlying concept as to the significance of menstruation, i. e., that all the changes preceding the actual menstrual period are in the nature of a preparation for a fertilized egg, with casting off of the uterine surface and menstrual bleeding when fertilization does not occur. How different this concept from the still prevalent lay view that the purpose of menstruation is to rid the body of poisons and harmful materials!—Novak, Emil: The Woman Asks the Doctor, Baltimore, Williams and Wilkins Company, 1935.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

University News. — The twenty-fifth anniversary of the inauguration of graduate studies will be celebrated by the University of Southern California with a three day conference beginning November 21. Group conferences will include the fields of social sciences, languages and literature, education, psychology, physical sciences, mathematics, biology and medical sciences, philosophy, history and international relations.

Dr. Leake Appointed Librarian. — Chauncey D. Leake, Ph.D., professor of pharmacology, University of California Medical School, has been appointed librarian of the medical school to succeed Dr. Sanford V. Larkey, who was named director of the Welch Medical Library, Johns Hopkins University School of Medicine, Baltimore. For the present Drs. Leake, Langley Porter and Salvatore P. Lucia are continuing the work of the department under the chairmanship of Dr. Porter. Dr. Larkey, who was also chief premedical adviser, was succeeded in this position by Dr. Charles A. Noble Jr.

Symposium on Heart Disease.—The sixth annual graduate symposium on heart disease, under the auspices of the heart committee of the San Francisco County Medical Society, will be held, November 20-21. There will be morning, afternoon and evening sessions at the University of California, San Francisco and Stanford University hospitals and at the department of public health. The course will cover diagnosis, prognosis and treatment. Advances in cardiology will be evaluated, and clinics with practical demonstrations will be held. Further information may be obtained from the secretary, Dr. John P. Strickler, 490 Post Street, San Francisco.

DISTRICT OF COLUMBIA

Hospital News. — The Gallinger Municipal Hospital formally dedicated a new isolation pavilion, September 3. The new addition cost about $500,000. Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, gave the dedicatory address.

Tuberculosis Survey.—Plans are being drawn up for a survey on tuberculosis in the District of Columbia, according to the *Bulletin* of the National Tuberculosis Association. The survey has been made possible by an appropriation of $101,000 by the Works Progress Administration. The program will include physical examination, tuberculin tests and x-ray examination by the rapid paper film method.

Davidson Lecture.—Dr. George C. Ruhland, health officer of the District of Columbia, will deliver the Davidson lecture of the Medical Society of the District of Columbia, November 13, on "The Newer Public Health." The lecture was established by the medical society as a tribute to Dr. Edward Young Davidson "for initiating and guiding to a successful completion the project of building and owning its own home."

Society News. — Drs. Charles Armstrong ,and Ralph D. Lillie addressed the Washington Society of Pathologists, October 5, on "Human and Experimental Aspects of Lymphocytic Choriomeningitis, a New Disease in Man." Bone tumors will be discussed by Drs. Charles F. Geschickter, Baltimore, and Claude Moore, at the meeting November 2. —— The Louis Mackall Medical Society was addressed, October 14, by Drs. Hill Carter on headache and Richard W. Wilkinson, peroral endoscopy.

GEORGIA

Dr. Rivers to Give Anderson Lecture.—Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research, New York, will deliver the annual Lilly Heard Anderson Lecture in Pediatrics at the Academy of Medicine in Atlanta, November 14. His subject will be "Virus Diseases of the Central Nervous System."

Personal.—Dr. Thomas F. Abercrombie, Atlanta, director of the state department of public health, was reelected, September 18, to serve his fourth term.——Dr. Charles S. Jernigan, Sparta, has been appointed by the U. S. War Department to take charge of the medical service for the Civilian Conservation Corps in South Carolina.

Society News.—The second clinical conference of the Georgia section of the Southeastern Surgical Congress was held in Royston, October 16.——Dr. Louis Smith, Lakeland, addressed the Lowndes County Medical Society, August 13, on "Pernicious Nausea and Vomiting."——Dr. Leonard R. Massengale read a paper before the Randolph County Medical Society in Cuthbert, September 5, on "Sickle Cell Anemia."——A symposium on tuberculosis was presented before the Fulton County Medical Society, Atlanta, October 3, by Drs. Paul P. McCain, Sanatorium, N. C., George F. Klugh Sr., Albert Worth Hobby, Launcelot Minor Blackford, Joseph C. Massee, Benjamin H. Clifton and Champneys H. Holmes.——At the annual meeting of the Fifth District Medical Society in Atlanta, October 17, speakers included Drs. George H. Bunch, Columbia, S. C., on "Suppurative Pericarditis"; Leland G. Baggett, Atlanta, "Transplantation of the Ureters into the Sigmoid," and Warren T. Vaughan, Richmond, Va., "Diagnosis and Treatment of Food Allergy."

IDAHO

State Medical Election.—Dr. Dailey C. Ray, Pocatello, was chosen president-elect of the Idaho State Medical Association at its annual meeting in Boise, September 13. Dr. Joseph H. Crampton, Lewiston, as president, succeeding Dr. Charles R. Scott, Twin Falls, will take office in January. Dr. Harold W. Stone, Boise, was reelected secretary. Dr. Ray graduated from the Hospital College of Medicine, Louisville, in 1902. He is 58 years of age. In 1933 he was a member of the state legislature.

ILLINOIS

Society News.—The St. Clair County Medical Society was addressed, October 2, in Belleville by Dr. T. Wistar White, St. Louis, on "Prevention and Treatment of Certain Communicable Diseases," and in East St. Louis, October 3, by Dr. Charles B. Reed, Chicago, on "Questions Facing Medicine Today."——Dr. Wendell D. Little, Indianapolis, discussed "Surgical Conditions of the Abdomen" before the Vermilion County Medical Society, Danville, October 1.

"Liberty Ball" Racket.—Solicitation of funds for beneficiaries of the Veterans' Administration through "liberty balls" and similar affairs has not been authorized, according to a statement from Dr. Thomas Hugh Scott, manager of the veterans' facility at Hines. This announcement was made so that the public may not be misled and induced by false representation to respond to telephone solicitation for the sale of tickets to affairs purporting to be for the benefit of "crippled soldiers" who are patients in the Hines institution.

Chicago

Dr. Tatum to Lecture.—Dr. Arthur L. Tatum, professor of pharmacology, University of Wisconsin Medical School, Madison, will deliver an illustrated lecture on "Some Studies in Specific Arsenical Chemotherapy" at Thorne Hall, Northwestern University, October 25, at a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine.

The Belfield Lecture.—Fred Conrad Koch, Ph.D., professor of physiological chemistry and chairman of the department of physiological chemistry and pharmacology, University of Chicago, will deliver the seventh annual William T. Belfield Lecture before the Chicago Urological Society at the Palmer House, October 24. Dr. Koch's subject will be "The Biochemistry and Physiological Significance of the Male Sex Hormones."

Cancer Talks for Lay Persons.—The Chicago Woman's Club, through its cancer research committee, will offer a series of talks on cancer on five consecutive Thursday mornings, beginning October 24. The course is intended particularly for lay women, it was stated. Dr. Frank L. Rector, Evanston, Ill., field representative, American Society for the Control of Cancer, will present the first lecture on "The Story of Cancer." Other speakers will be:

Dr. James P. Simonds, professor of pathology, Northwestern University School of Medicine, October 31, Scientific Aspects of Cancer.
Maud Slye, director, cancer laboratory, Otho S. A. Sprague Memorial Institute, University of Chicago, November 7, Transmission of Cancer Through Inheritance.
Dr. Fred L. Adair, professor and chairman of the department of obstetrics and gynecology, University of Chicago, Cancer of Female Structures.
Dr. Max Cutler, director, tumor clinic, Michael Reese Hospital, Cancer of the Breast.

Course on Psychogenic Organic Disturbances.—The Chicago Institute for Psychoanalysis announces a special course for physicians engaged in research work on psychogenic organic disturbances. The course opened, October 1, with a lecture by Dr. Walter L. Palmer of the University of Chicago on "Physiology and Clinical Pathology of Peptic Ulcer, Ulcerative Colitis, and Functional Bowel Disturbances." Dr. Palmer spoke October 8 and October 15. Other lecturers in the series are:

Dr. Ralph W. Gerard, University of Chicago, October 15, 22, 29; Recent Progress in the Physiology of the Nervous System (Action Potentials, Thalamus and Vegetative System).
Dr. Ben Z. Rappaport, University of Illinois, October 22, 29, November 5; Allergy and Bronchial Asthma.
Dr. Roy R. Grinker, University of Chicago, November 5, 12, 19; Clinical Pathology and Theory of the Epilepsies.
Broda O. Barnes, Ph.D., University of Chicago, November 26, December 3; Physiology of the Endocrine Glands.
Dr. Solomon Strouse, Rush Medical College, December 10, 17; Clinical Pathology of Endocrine Disturbances.
Dr. M. Herbert Barker, Passavant Hospital, January 7, 14; Physiology and Clinical Pathology of Essential Hypertension.
Dr. Erwin P. Zeisler, Northwestern University, January 21, 28; Clinical Pathology of Eczema and Urticaria.

Society News.—The Chicago Medical Society will be addressed, October 23, by Drs. Frank J. Jirka, state health officer of Illinois, on "What the Medical Profession Can Do to Reduce Automobile Accidents"; injuries to the head, spine, pelvis, chest and abdomen will be considered by Drs. Adrien H. P. E. Verbrugghen, George G. Davis, William R. Cubbins and Roger T. Vaughan. A symposium on the eye will be presented before the society, October 30, by Drs. Thomas D. Allen, Richard C. Gamble, Harry S. Gradle, Sanford R. Gifford, Frank E. Brawley, Samuel J. Meyer and G. Henry Mundt.——Dr. Ernst A. Pohle, Madison, Wis., discussed "Roentgen Therapy in Leukemia, Hodgkin's and Allied Diseases with Special Consideration of General Body Exposure" before the Chicago Roentgen Society, October 10. Dr. Richard H. Jaffe spoke on "Bone Changes in Leukemia."——Speakers before the Chicago Tuberculosis Society, October 11, were Drs. Frederick Tice and Allan J. Hruby on "Progress in Collapse Therapy."——The Chicago Pathological Society was addressed, October 14, among others, by Dr. Percival Bailey on "Relationships of the Pathologist to the Clinic."——Economics was discussed at a meeting of the Chicago Society of Industrial Medicine and Surgery, October 16, by Drs. Felix M. Jansey, Thomas P. Foley and John G. Frost.

KANSAS

Health at Kansas City.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended October 5, indicate that the highest mortality rate (18) appears for Kansas City and the rate for the group of cities as a whole, 10. The mortality rate for Kansas City for the corresponding week last year was 11.3 and for the group of cities, 9.9. The annual rate for eighty-five cities for the forty weeks of 1935 was 11.4, and the same rate appears for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

KENTUCKY

Society News.—A symposium on treatment of syphilis was presented at a meeting of the Jefferson County Medical Society, Louisville, October 7, by Drs. Adolph B. Loveman, Armistead M. Leigh and Winston U. Rutledge.——Dr. Edward C. Rosenow, Rochester, Minn., addressed the Third District Medical Society at a special meeting in Bowling Green, August 30, on infantile paralysis.

State Medical Election.—Dr. Joseph D. Northcutt, Covington, was chosen president-elect of the Kentucky State Medical Association at its annual session in Louisville, October 3. Dr. Joshua B. Lukins, Louisville, was installed as president and the following were elected vice presidents: Drs. Emmet F. Horine, Louisville; Gaithel L. Simpson, Greenville, and William H. Smith, Danville. Dr. Northcutt is 51 years old and a graduate of the University of Louisville School of Medicine, class of 1908.

MICHIGAN

State Medical Election.—Dr. Henry E. Perry, Newberry, was chosen president-elect of the Michigan State Medical Society at its annual meeting in Sault Ste. Marie, September 25, and Dr. Grover C. Penberthy, Detroit, was installed as president. Dr. Clifford T. Ekelund, Pontiac, is the secretary. The next annual session will be held in Detroit in September. At this meeting, three physicians were made members emeritus: Drs. John A. Wessinger, Ann Arbor, Alvin H. Rockwell and Edward Ames, Kalamazoo. It was voted to expand facilities for graduate study to Bay City and at some place in the

western part of the upper peninsula. Centers have been established at Grand Rapids, Kalamazoo and Flint. Dr. Perry graduated from the Michigan College of Medicine and Surgery in 1898 and from Northwestern University School of Medicine in 1904. He served a term in the state legislature and as president of the Upper Peninsula Medical Society.

MISSOURI

County Society Adopts "Washington Plan."—The St. Louis County Medical Society at a meeting, September 11, adopted a plan adapted from the "Washington (D.C.) Plan." It has been unanimously endorsed by the St. Louis medical and dental societies and plans are under way to organize the "Medical-Dental Service Bureau, Inc." A more comprehensive plan has been functioning for several months in the District of Columbia, with the approval of the Medical Society of the District of Columbia. Mr. Ross Garrett, coordinator of the medical economic security plans in Washington, who surveyed the conditions in St. Louis, will supervise the organization of the bureau.

Society News.—The Kansas City Pediatric Society was addressed, September 12, by Drs. John Aull, Kansas City, and Harold E. Petersen, St. Joseph, on "Fresh Cow's Milk in Infant Feeding" and "Nephrosis," respectively.——Dr. Robert Lee Hoffmann was elected president of the Kansas City Urological Society, September 4; Dr. Arthur L. Osborn, vice president, and Dr. Tony G. Dillon, secretary. —— The Jackson County Medical Society was addressed, September 24, by Dr. Carroll P. Hungate, Kansas City, on "Infections of the Hand."—— Dr. Dayton Rusby Seabaugh, Jackson, among others, discussed spinal anesthesia before the Cape Girardeau County Medical Society in Jackson, September 9. —— At a meeting of the Randolph-Monroe County Medical Society in Moberly, September 10, Drs. George H. Hoxie and Everett R. DeWeese, Kansas City, spoke on "Clinical Aspect of Early Tuberculosis" and "Roentgenologic Aspect of Early Tuberculosis," respectively.

NEBRASKA

Clinical Conference at Omaha.—The third annual assembly of the Omaha Mid-West Clinical Society will be held in Omaha at the Hotel Paxton, October 28-November 1. The plans include general assemblies for morning and evening, lectures in the middle of the day and clinics in the afternoon and on the last day, ward walks and clinics at the Douglas County, St. Joseph's and University of Nebraska hospitals. Guest speakers who will address the general assemblies and conduct clinics will be:

Dr. Joseph Brennemann, Chicago, Acute Conditions in the Abdomen in Childhood; Treatment of Empyema.
Dr. Jay Arthur Myers, Minneapolis, Research Advances in the Diagnosis and Treatment of Tuberculosis; Controlling Tuberculosis.
Dr. William B. Carrell, Dallas, Texas, Use of Cow Horn and of Internal Removal Fixation Devices in Treatment of Fractures; Sprains of the Knee.
Dr. James R. Goodall, Montreal, Que., Toxemia of Pregnancy; Obstetric Emergencies and Sequelae.
Dr. Roy R. Grinker, Chicago, Problems of Meningitis; Central Regulatory Mechanisms.
Dr. Arthur C. Christie, Washington, D. C., Diagnosis and Treatment of Bronchiectasis; Cancer of the Mouth and Lip.
Dr. Russell L. Cecil, New York, Present Status of Pneumonia Therapy; Fever Therapy in Rheumatoid Arthritis.
Dr. Andrew C. Ivy, Chicago, Enterogasterone—An Internal Secretion That Inhibits Gastric Secretion and Motility; The Therapy of Biliary Tract Disease from the Viewpoint of Applied Physiology.
Dr. Udo J. Wile, Ann Arbor, Common Pathologic Conditions of the Lips and Oral Cavity.
Dr. Vernon C. David, Chicago, Intestinal Obstruction Due to Lesions of the Large Bowel; Ulcerative Colitis from a Surgical Standpoint.
Dr. Arthur B. Cecil, Los Angeles, Genital Tuberculosis; Successful Operations in Hypospadias and Epispadias.
Dr. Edward C. Sewall, San Francisco, Sinusitis, Allergy and the Common Cold; Operative Technic in Sinusitis, External Approach.

NEW YORK

Society News.—Drs. Temple S. Fay and Walter I. Lillie, Philadelphia, addressed the Broome County Medical Society, October 1, in Binghamton, on "Common Cerebral Symptoms in Medicine and Surgery" and "Ophthalmological Signs and Symptoms in Cerebral Disease," respectively.——At the quarterly meeting of the Ontario County Medical Society, October 8, speakers were Drs. Frederick S. Wetherell, Syracuse, on "Treatment of Persistent Nonbloody Vaginal Discharge," and Noah Stanley Lincoln, superintendent of Mount Morris Tuberculosis Hospital, on the work of the hospital.——Philip P. Jacobs, Ph.D., director of publications and extension, National Tuberculosis Association, New York, conducted an institute on tuberculosis at Jamestown, September 16-17, under the auspices of the Chautauqua County Tuberculosis and Health Association.——Dr. Henry G. Bugbee, New York, addressed the Onondaga Medical Society, Syracuse, October 8, on "Cancer of the Prostate."——Dr. Oswald S. Lowsley, New York, addressed the Medical Society of the County of Westchester, Valhalla, October 15, on "Some Modern Phases of Urological Surgery and Diagnosis."——The Western New York-Ontario Urological Society, a division of the American Urological Association, is holding its annual meeting in Geneva, October 19. Speakers include Drs. Charles C. Higgins, Cleveland, on "Further Observations on Experimental Production and Solution of Kidney and Bladder Stones"; James C. McClelland, Toronto, "X-Ray Studies in the Diagnosis of the Kidney," and Stafford L. Warren, Rochester, "Heat Therapy in Urology."——Drs. John Francis McGarrahan, Cohoes, and Harold P. McGan addressed the Albany County Medical Society, Albany, September 25, on "Significance of Dyspepsia" and "Treatment of Ambulatory Diabetes," respectively. —— The midyear meeting of the New York State Association of Public Health Laboratories will be held November 1 at the state laboratory in Albany.

New York City

District Medical Meeting.—The First District Branch of the Medical Society of the State of New York held a meeting at the Hotel Pennsylvania, October 8, with the following speakers: Drs. John J. Moorhead, on "Traumatic Surgery"; Hugh Auchincloss, "Hand Destruction and Construction"; George M. MacKee, "Some Dermatoses, Their Origin and Treatment" and Byron P. Stookey, "Vertebral and Associated Spinal Cord Injuries."

Personal.—Dr. Currier McEwen, assistant dean, secretary and assistant professor of medicine of New York University College of Medicine, has been appointed to the medical board of the New York City Employees' Retirement System. —— Dr. Gerard L. Moench will address the German Gynecological Society at a meeting in Munich, October 23-26, on human fertility. —— Dr. Charles F. McCarty, formerly director of physical therapy in the New York City Department of Hospitals, has been appointed director of the medical and nursing service of the Emergency Relief Bureau. —— Drs. Charles Ward G. Crampton and Moses Keschner were appointed by the Medical Society of the State of New York as delegates to a state conference on crime called by Governor Lehman, September 30-October 3.

Columbia University News.—At the opening of the academic year at Columbia University, the following appointments to the faculty of the College of Physicians and Surgeons were announced:

Dr. Harold Alexander Abramson, assistant professor of physiology.
Dr. Cornelius G. Dyke, assistant professor of radiology.
Dr. Albert Victor Hardy, assistant professor of epidemiology.
Dr. Charles Wadsworth Schwartz, associate professor of radiology.

At the Neurological Institute it was announced that Dr. Nolan D. C. Lewis, director of laboratories at St. Elizabeth's Hospital, Washington, D. C., has been appointed assistant medical director of the institute in charge of clinical and clinicopathologic research and professor of neuropathology in the College of Physicians and Surgeons.

Public Lectures at the Academy.—Dr. Howard W. Haggard, associate professor of applied physiology, Yale University, New Haven, Conn., will give the second public lecture in the new series sponsored by the New York Academy of Medicine, November 14, on "Medicine in the Days of the Great Monarch." Future lecturers in the series will be:

Dr. Alexis Carrel of Rockefeller Institute for Medical Research, The Mystery of Death, December 12.
Dr. Harlow Brooks, Medicine of the American Indian, January 9.
Dr. Benjamin P. Watson, How We Learned About the Human Body, February 13.
Dr. Foster Kennedy, The Organic Background of Mind, March 12.
Elmer V. McCollum, Sc.D., Baltimore, The Story of Vitamins, April 9.
Dr. George Draper, Man—The Common Denominator of Disease, May 14.

The first lecture in this series was given by Dr. Walter B. Cannon, Boston, October 3, on "The Wisdom of the Body."

NORTH CAROLINA

Society News.—Drs. Byrd C. Willis, Rocky Mount, and Duncan R. McEachern, Wilmington, addressed the Third District Medical Society at Wilmington, September 6, on "Gunshot Wounds in the Abdomen" and "Gas Bacillus Infection," respectively.——Dr. Thomas C. Bost, Charlotte, addressed the Mecklenburg County Medical Society, Charlotte, September 3, on "Intestinal Polyposis." —— The Eighth District Medical Society met at Greensboro, September 24, with the following speakers, among others: Drs. James Asa Shield, Richmond, Va., on "Causes and Treatment of Vertigo"; James P. Leake of the U. S. Public Health Service, Washington, D. C., "Summary of the Poliomyelitis Situation," and Edward J. G.

Beardsley, Philadelphia, "A Physician's Opportunities and Responsibilities."——Dr. Walter R. Johnson, Asheville, addressed the Forsyth County Medical Society, Winston-Salem, September 10, on peptic ulcer.——Dr. Beverly Douglas, Nashville, Tenn., addressed the Buncombe County Medical Society, Asheville, September 16, on "Plastic Surgery of the Face."

OHIO

Toledo Postgraduate Day.—The Medical Institute of the University of Toledo announces its second annual Postgraduate Day, to be held November 8, in Doermann Auditorium. The subject will be cardiovascular renal disease, discussed by Drs. Paul Dudley White, assistant professor of medicine, Harvard University Medical School, Boston, and Alfred Stengel, professor of medicine, University of Pennsylvania School of Medicine, Philadelphia.

PENNSYLVANIA

State Medical Election.—Dr. Maxwell J. Lick, Erie, was chosen president-elect of the Medical Society of the State of Pennsylvania at the annual meeting in Harrisburg, September 30-October 3, and Dr. Alexander H. Colwell, Pittsburgh, was installed as president. Vice presidents elected were Drs. Harvey F. Smith, Harrisburg; Frank A. Lorenzo, Punxsutawney; Walter J. Stein, Ardmore, and Francis A. Faught, Philadelphia. Dr. Walter F. Donaldson, Pittsburgh, was elected secretary for his eighteenth term. The next meeting will be held in Pittsburgh, Sept. 28-Oct. 1, 1936.

Philadelphia

Seminars on Anesthesia.—A series of graduate seminars on anesthesia presented under the auspices of the Philadelphia County Dental Society in collaboration with the Philadelphia County Medical Society was begun October 18 with a clinic in the afternoon by Dr. Charles L. Brown and an address in the evening by Dr. Edward Lodholz, on "The Biological Nature of Anesthesia." Coming events in the series are:

October 25, Dr. Carl F. Schmidt, Physiologic and Pharmacologic Aspects of Anesthesia. Clinic by Dr. Henry K. Mohler.
November 1, Dr. Ralph M. Waters, Madison, Wis., Inhalation Anesthetic Agents. Clinic by Drs. John H. Gunter and Edward W. Beach.
November 8, Dr. Philip D. Woodbridge, Boston, Signs and Symptoms of General Anesthesia. Clinic by Drs. John D. Reese, John A. Stiles and Henry S. Ruth.
November 15, Dr. Emery A. Rovenstine, New York, Inhalation Anesthetic Methods. Clinic by James R. Cameron, D.D.S., and Dr. Frederick W. Clement, Toledo, Ohio.
November 22, Dr. John S. Lundy, Rochester, Minn., Regional Anesthetic Agents and Methods. Clinic by L. Wallace Ohl, D.D.S., Pittsburgh.

Pittsburgh

University Appointments.—Dr. Stanley S. Smith, associate professor of ophthalmology, University of Pittsburgh School of Medicine, has been appointed professor to succeed Dr. William W. Blair. Dr. George J. Wright has been made professor of neurology to succeed the late Dr. Thomas M. T. McKennan.

Society News.—The first fall meeting of the Allegheny County Medical Society, October 15, was devoted to a discussion of intestinal obstruction, with Dr. John W. Stinson as the essayist.——Speakers at a meeting of the Pittsburgh Academy of Medicine, October 8, were Drs. Ralph H. Harrison, on "Misconception and Mismanagement in Cancer of the Breast," and James M. Strang, "Use of Dinitrophenol in Obesity."

WASHINGTON

Hospital News.—The John Brining Memorial Hospital was recently dedicated at Dayton; it has twenty beds.——Dr. Philip Narodick, Seattle, has been appointed medical director of the King County Tuberculosis Hospital.

Personal.—Dr. Lynne A. Fullerton has recently been appointed medical inspector in the Indian Medical Service with headquarters in Spokane.——Dr. George A. LeCompte, Shelton, has been appointed health officer of Mason County, succeeding Dr. William M. Beach, Shelton.

Society News.—Drs. Kenneth K. Sherwood, Kirkland, and Otis F. Lamson, Seattle, addressed the King County Medical Society, Seattle, September 16, on "Practical Value of the Sedimentation Test, Especially in Arthritis" and "Sarcoma of the Stomach," respectively.——A regional meeting of the American Academy of Pediatrics was held in Seattle, August 9-10. Papers were presented by Drs. Arthur E. Wade, Herbert E. Coe and Edward A. LeCocq, Seattle; Lendon Howard Smith and Winfred H. Bueermann, Portland, Ore.; Edwin J. Barnett, Spokane; Alfred Howard Spohn, Vancouver, B. C., and Franklin P. Gengenbach, Denver.

WEST VIRGINIA

Society News.—Dr. James Lewis Blanton, Fairmont, addressed the Harrison County Medical Society, September 5, at Clarksburg, on "The Use of Vaccines and Serums in the Prevention of Infectious Diseases."——Dr. Cecil Striker, Cincinnati, addressed the Cabell County Medical Society, Huntington, September 12, on "Clinical Management of Diabetes Mellitus and Some of Its Complications."——Dr. Edgar F. Heiskell, Morgantown, was elected president of the Hospital Association of West Virginia at its annual meeting in Parkersburg, September 5-6.——The Society of Industrial Physicians and Surgeons of West Virginia held its annual meeting in Charleston, October 4; speakers included Drs. Walter G. Stern, Cleveland, who conducted a symposium on fractures and presented a paper on "The Estimation of Disability from an Orthopedic Standpoint," and Moritz F. Petersen, Charleston, "The Allergy Problem in Industry."——Dr. George Ralph Maxwell, Morgantown, was reelected president of the West Virginia Tuberculosis Association at the annual session in Morgantown, September 5-6. Among other speakers, Dr. David Salkin, Hopemont, discussed therapeutic value of social and vocational guidance for sanatorium patients.——Dr. Joseph Earle Moore, Baltimore, addressed the Ohio County Medical Society, at the first fall meeting at the Ohio Valley General Hospital, Wheeling, September 27, on "Treatment of Early Syphilis in Relation to Public Health Control."——Dr. William R. Counts, Kyle, addressed the McDowell County Medical Society, Welch, September 11, on treatment of gonorrhea.——Dr. Charles C. Higgins, Cleveland, addressed the Kanawha Medical Society, Charleston, September 10, on "Production, Prevention and Treatment of Urinary Calculi."

WISCONSIN

State Medical Election.—Dr. Stephen E. Gavin, Fond du Lac, was named president-elect of the State Medical Society of Wisconsin at the annual meeting in Milwaukee, September 19, and Dr. Ralph M. Carter, Green Bay, was installed as president. The next annual meeting will be held in Madison. Dr. Gavin was graduated from Rush Medical College, Chicago, in 1899.

GENERAL

Results of Examinations in Otolaryngology.—Fifty-seven candidates took the examination of the American Board of Otolaryngology in Cincinnati, September 15. Of this number forty-two were certified and the remainder conditioned. The board will hold an examination in Kansas City, Mo., May 9, 1936, before the annual session of the American Medical Association and in New York in October 1936 before the meeting of the American Academy of Ophthalmology and Otolaryngology. Prospective applicants for certification should address the secretary of the board, Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, for application blanks.

Fund to Study Dementia Praecox.—A special committee of the National Committee for Mental Hygiene, at a meeting in New York, October 4, allocated for the study of dementia praecox a fund of $40,000, which was donated by the Scottish Rite Masons, the New York *Times* reports. Laboratories, hospitals and clinics in the following cities were selected to receive parts of the grant to be used during the coming year: New York, Philadelphia, Baltimore, Boston, Albany, Providence, Chicago, Ann Arbor, Mich., Waverly, Mass., and Howard, R. I. Plans for the campaign were laid a year ago when, at the request of the Scottish Rite Masons, the National Committee for Mental Hygiene undertook to investigate the possibilities for a frontal attack on the problem, the *Times* continues.

Neuropsychiatric Meeting in Topeka.—The fourteenth annual convention of the Central Neuropsychiatric Association will be held in Topeka, Kan., October 25-26, under the presidency of Dr. George W. Hall, Chicago. Meetings will be at the Menninger Clinic and Sanitarium. Among speakers listed on the program are:

Dr. Benjamin Landis Elliott, Kansas City, Myasthenia Gravis.
Dr. Samuel D. Ingham, Los Angeles, Word Blindness and Associated Symptoms.
Dr. Edward T. Gibson, Kansas City, Automatic Writing of Verse: Case Report.
Dr. Robert P. Knight, Topeka, The Psychodynamics of Chronic Alcoholism.
Dr. Walter F. Schaller, San Francisco, Evaluation of Character and Temperament in the Post-Traumatic Psychoneuroses.

At a luncheon Friday, at the Hotel Kansas, Gov. Alfred M. Landon will speak, and at a banquet Friday evening Drs. Hall and Smith Ely Jelliffe, New York, will be the speakers.

Society News.—Dr. Elva A. Wright, Houston, Texas, was elected president of the Southern Tuberculosis Conference at its annual meeting in Houston, September 16-18. Among

speakers at the conference were Drs. Cameron St. Clair Guild, New York, on "Tuberculosis in the Negro" and Martha M. Eliot, Washington, D. C., "The Social Security Act and Its Relation to the Control of Tuberculosis in Children."——The fifth International Congress of Radiology will be held in Chicago, Sept. 13-17, 1937. Dr. Benjamin H. Orndoff, 2561 North Clark Street, Chicago, is the general secretary.——Dr. Thomas Parran Jr., health commissioner of the state of New York, was elected president of the American Public Health Association at the meeting in Milwaukee, October 9. Next year's meeting will be held in New Orleans.——Dr. Charles F. Geschickter, Baltimore, was elected president of the American Association for the Study of Neoplastic Diseases at its regular fall meeting in Washington, D. C., September 5-7. Dr. Samuel W. Budd, Richmond, Va., was named vice president. The next meeting will be in Baltimore, December 19-21.

Bequests and Donations.—The following bequests and donations to medical institutions have recently been announced:

Presbyterian Hospital, New York, $162,192 from the estate of Mary B. Tolfree.

St. Agnes' Hospital for Crippled Children, White Plains, N. Y., $18,000 by the will of Walter G. Butler.

Beth David Hospital, New York, $1,000 under the will of the late Julius Nelson.

Presbyterian Hospital, Philadelphia, $1,000 by the will of Miss Elizabeth Wright.

Shriners Hospital for Crippled Children, $12,000; Rush Hospital for Consumption and Allied Diseases, $2,000, Philadelphia, by the will of the late Marie Redifer, Atlantic City.

Orthopedic Hospital and Dispensary, New York, $10,000 by the will of Mrs. Harriet Crocker Alexander.

St. Luke's Hospital, New York, $7,500 by the will of the late John Cunningham.

Northern Westchester Hospital, Mount Kisco, N. Y., $4,000 from the estate of the late Charles A. Halstead, Mount Kisco.

Yonkers (N. Y.) General Hospital, $2,000 by the will of William Heatherington.

Woman's Hospital of Philadelphia, $3,000 from the estate of the late Dr. Emma V. Boone.

Lankenau Hospital, Philadelphia, will receive $5,000 from the estate of Mrs. Bessie L. Diedel after the death of an immediate legatee; $1,000 from the estate of Pauline Burges.

Woman's Hospital, Philadelphia, the bulk of the $12,000 estate of Miss Mary A. Spain to endow a room to be occupied by public school teachers.

Children's Medical Division of Bellevue Hospital, New York, will ultimately receive most of the estate of Mrs. Anna Phipps Tinker, widow of the late Dr. Horace H. Tinker. The estate was appraised at about $250,000.

Long Island College Hospital, Brooklyn, $10,000 by the will of Mary Moore Orr.

Episcopal Hospital, Philadelphia, $30,000 to endow six free beds, by the will of the late Mrs. Annie B. Moore.

Pennsylvania Hospital, Philadelphia, $12,000 by the will of the late Rebecca A. Hough.

The following Philadelphia hospitals received bequests in the will of the late Jacob Dreifus: Jewish Hospital, $30,000; Mount Sinai Hospital, $10,000; Jefferson, Pennsylvania, Friends, University and Frederick Douglass Memorial hospitals, $5,000 each. Other beneficiaries were Misericordia and St. Joseph's hospitals, Atlantic City, $2,500 each; Eagleville Sanatorium for Consumptives, Eagleville, Pa., $10,000.

St. Luke's and Children's hospitals, Philadelphia, $10,000 by the will of the late Mrs. Elizabeth Powell.

American Oncologic Hospital, Philadelphia, $5,000 by the will of Miss Mary E. Hebard and about $15,000 from the estate of Mary Ward Graham.

CANADA

Personal.—Dr. Wallace W. Cross, Hanna, has been appointed minister of health of Alberta.——The division of hospitals and the department of health of Ontario at Toronto have been merged under the minister of health, Dr. James A. Faulkner; the former director of hospitals, Dr. Bernard T. McGhie, is acting deputy minister of health, succeeding Dr. William J. Bell, retired. Dr. John W. S. McCullough, chief inspector of health, retired after twenty-five years' service.

Memorial Medal.—In memory of the late Dr. Frederick N. G. Starr, for many years professor of clinical surgery at the University of Toronto Faculty of Medicine, Mrs. Starr has arranged for a gold medal to be awarded by the Canadian Medical Association to any member of the association who adds distinction to the profession by his attainment in science, art or literature. It will be awarded annually or when in the judgment of a committee the occasion arises for the distinction. Dr. Starr was for several years general secretary of the association and president in 1927. He died in April 1934.

CORRECTION

The Genesis and Control of Epidemics.—In the editorial on "The Genesis and Control of Epidemics" (THE JOURNAL, September 21, page 968) the name "Topley" should be corrected to read "Webster" beginning on page 969, second column, twenty-sixth line, through the remainder of the paragraph. Moreover, quotation marks should surround portions of the material beginning on line twenty-six with the word "breeds" page 969, and continuing to the end of line ten, of column one, on page 970.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 21, 1935.

The Most Barbarous Perversion of Science

This country is much exercised about protecting the civilian population against air attacks. At a meeting of the National Peace Council, which was attended by eminent scientists such as Sir F. Gowland Hopkins, P.R.S., Earl Russell, F.R.S., Professor Soddy and Julian Huxley, the precautions taken by the government were criticized. The council has issued a statement in which it views with apprehension the growing tendency in official quarters of this and other countries to accept the use of aircraft for unrestricted bomb and gas attacks on civil populations. It considers this the most barbarous perversion of science and industry of human history and is sure that it would in a short time lead to the breakdown of civilized life. Nothing short of abolition of aerial bombing can prevent this result. The method (implicit in the British government's program) of countering air attacks by reprisals carries, in the view of the council, its own condemnation. Our government's acceptance of this principle has already increased the apprehension of air attacks in western Europe. Active defense by interceptive aircraft and antiaircraft guns can only produce casualties in the attacking force without preventing more than a small fraction of the possible damage. The measures of passive defense proposed by the government—adaptation of rooms to render them gas tight, while they are unprotected against explosive or incendiary bombs, the purchase of cheap gas masks and the organization of casualty services—are pronounced grossly inadequate and calculated to produce a dangerous illusion of security. Only some slight mitigation of casualties can thus be achieved. The only passive defense likely to be efficacious technically is the construction of armored gas-proof shelters and the provision of closed-circuit oxygen gas masks and complete vesicant-proof suits for the whole population. "Not only would this be impossible because of the enormous cost involved, but it would be an intolerable burden on the population and destroy all the possibilities for a better life which science rightly applied can offer."

Not every one will completely accept these pessimistic conclusions, even though uttered by scientists of the highest eminence, who, it may be remarked, produce nothing constructive. Such a practical people as the English always prefer action to theorizing. The government is proceeding with its precautions. Addressing a conference of the Institute of Fire Engineers, on the morrow of the meeting described, Wing Commander E. J. Hodsoll, assistant undersecretary in charge of the air raids precautions department of the home office, stated that the measures which the government proposes to take to protect the civil population against air attacks will include the establishment of first aid decontamination posts, casualty clearing stations, base hospitals, an intelligence service, and a school for training instructors in antigas measures. Fire brigades are to be supplied with respirators and protective clothing. The British Red Cross Society and kindred organizations will organize and staff first aid posts and decontamination posts. The first aid posts will be located close enough together to enable persons to reach one quickly on foot. The base hospitals will be located as far as possible outside the danger zone and will be fed by the clearing stations. Fire brigades will be trained in antigas measures, including decontamination of clothing and equipment. For this purpose men will be trained as instructors at the gas school shortly to be established. Mr. Hodsoll said that the authorities were confident that these measures would materially minimize the effects of air attacks.

Improved Conditions of Service for Army Surgeons

There is a serious shortage of candidates for the Royal Army Medical Corps because of inadequacy of pay and restriction of professional opportunities. The subject was therefore investigated by a departmental committee, which has recommended a number of reforms, which have been accepted. It is proposed to increase the length of the career, to lower the age at which promotions take place and to increase the proportion of officers promoted to the higher ranks. All entrants will receive short-service commissions. After five years a surgeon will have the choice of retiring with a gratuity of $5,000 or applying for a permanent commission. By substantial up-grading a surgeon will spend a larger part of his career in the higher ranks than formerly. If he joins at 25 and is granted a permanent commission, it is guaranteed that he will be a captain at 26 and a major at 35. Promotion to lieutenant colonel and colonel will be by selection, on an average of seventeen and twenty-five years respectively after joining. The career of the average officer will normally extend to the age of 57. If he joins at 25 his pay will be $1,810 as lieutenant; at 26, $2,235 as captain; at 35, $3,105 as major; at 42, $4,745 as lieutenant colonel; at 45, $5,155 as lieutenant colonel; at 50, $5,780 as colonel. This up-grading means improved pension rates. An officer who shows aptitude in any particular branch of his profession will have an opportunity of qualifying as a specialist and thereafter be employed in that branch for the greater part of his career.

A Six Months Baby

What is called "the smallest baby in the world" is to be seen at the Infants Hospital, Westminster. It is a six months baby which weighed at birth only 13 ounces, an ounce less than the previous record holder, a girl born in Surrey six years ago. The present baby is the son of a Newcastle plasterer and at the time of the report was 11 weeks old and weighed 3 pounds (instead of the 12 pounds normal for that age). He is growing rapidly and is expected to be of normal weight at the age of 18 months. Only about one six months baby in twenty survives. His cot is in a private room with the window open and he is kept at the normal temperature of 98.4 by means of an electric blanket. He is fed from a special bottle seven times a day and three times at night. His diet includes thyroid extract, calcium, extract of bone and vitamins. Most of his time is passed in sleep and he is under constant supervision. As a common cold would probably kill him, those who enter his room must wear a mask and gown. He is not bathed but his body is kept oiled. He has to be handled with extreme care.

Firewalking

A demonstration of firewalking, which is still practiced by natives of India at religious ceremonies, was given at Carshalton (near London) in the presence of members of the University of London Council for Psychical Research and some well known physicians. The firewalker was a young Indian, Kuda Bux, a Kashmiri Mohammedan, 30 years of age and weighing 8½ stone (54 Kg.). He said that he first practiced firewalking at the age of 14 and that the fire did not harm him because of his faith. The fire was contained in two trenches 12 feet long, 6 feet wide and 8 inches deep. The materials used in preparing the fire included 7 tons of oak logs, a ton of firewood, a load of forest-burnt charcoal and 10 gallons of paraffin. When the demonstration was given the fire trenches had been burning for eight hours and the charcoal, which had been placed on the top, was fanned by a high wind to an intense heat, which was measured by a thermometer and found to be 800 F. on the surface. Bare footed, Kuda Bux walked twice along these fire trenches, his feet making contact with the burning embers for some five seconds each time. After both walks his feet were examined by Professor Pannet, director of the surgical unit at St. Mary's Hospital, who found no scorching or other trace of injury. Under the arch of the right foot he previously placed a piece of court plaster, which was not even scorched. The temperature of the feet immediately after passing over the fire was found to be the same as before starting. Kuda Bux declared that he was not conscious of the heat as he walked over the fire, although he appeared to be as susceptible to the heat as other persons when standing near it. Professor Pannet said that there was no unusual toughness or thickening of the soles of the feet. Kuda Bux was invited to do the firewalk a third time, the full length of both trenches, but he asked to be excused. He appeared to be disturbed by the scientific tests and apparatus and the critical curiosity of the audience. His explanation was that "the faith" had gone out of him. Attempts to firewalk were then made by two young men, but after a couple of steps on the embers they jumped off with their feet blistered. One was the editor of *St. Bartholomew's Hospital Journal*. A physician present, who had seen the ceremony of firewalking in India, said that the test was made under unusually severe conditions, which would have deterred most firewalkers. The trench was shallower than was customary and with the high wind increasing combustion and blowing away the ash the heat was more intense and transmitted without any insulation. Though Kuda Bux boldly did the walk twice, he eventually seemed to realize that the conditions were too severe for him to do the firewalking properly. There was no question of any fake about what he did do. The circumstances of the performance rendered this impossible. But it is unsatisfactory that we are left with no explanation of the phenomenon within the sphere of physics or of physiology. Only that of "faith," given by Kuda Bux himself, is forthcoming. Perhaps something on the subject will be published by Professor Pannet or by other medical witnesses present.

Proposed National Oxygen Tent Service

The oxygen tent is regarded in this country as the most efficient means devised for the administration of oxygen, but it is not generally available. A number of leading teachers of the London hospitals have therefore sent a joint memorandum to the British Red Cross Society asking for help in rendering the tent more readily available in hospitals and in patients' homes. The society has responded by cooperating in the establishment of a national oxygen tent service. But before embarking on a complete scheme, which would involve much expense, the society wants to collect more data than are at present available on the value of the oxygen tent in various conditions. To obtain this it has placed an order for the construction of twelve sets of apparatus, which will soon be available. One tent will then be placed at the disposal of each of the principal London hospitals. The hospitals have been asked to make a trial of the tent over a period of not less than two months by keeping comprehensive records of the cases for which the tent has been used and reporting on the value of a national service. At the end of the trial the hospitals can acquire the tent by refunding the cost to the society. In its most modern form the tent is built on an adaptable frame and can be raised or lowered by means of a handle behind the bed. The patient is kept under observation through noninflammable celluloid windows.

The Treatment of Mental Disease

The annual report of the board of control, the body appointed by the government to control the administration of mental hospitals, records an increase in the number of voluntary admissions, which is reflected in a marked decrease of admissions under a certificate of insanity. The board expresses regret that the employment of whole-time resident chaplains in mental hospitals is now the exception, as these did valuable work by sympathy and encouragement. The report points out that occupational therapy is valuable not only as a method of treatment but also as a means of employing the so-called unemployables and so lessening their turbulence and destructiveness. But it must be under an occupational therapist who has made

a special study of the problem. A proposal to provide a hairdressing room for women patients at one hospital is noted with pleasure, as one of the first objects of treatment is to restore the patient's self respect, and few things are more fatal to a woman's self confidence than the consciousness that her hair is untidy. Comment is made also on the great progress in recent years in improving the dress of women patients. The need for increased provision for outdoor amusements for the younger patients and the value of drill and simple gymnastics for those incapable of organized games are mentioned. The total number of mentally defective patients in England and Wales who were in institutions and under guardianship, Jan. 1, 1935, was 41,314; in addition, 33,377 patients were under statutory supervision.

PARIS

(From Our Regular Correspondent)

Sept. 16, 1935.

Vaccination Against Plague with a Living Virus

The results of vaccination against plague having been unsuccessful among the natives of the French colony in Madagascar, with a virus in which the organisms had been killed, an attempt has been made to use a living vaccine with the aid of the EV strain of bacilli. G. Girard reported his experience at the July 2 meeting of the Academy of Medicine of Paris. In a district of Madagascar in which there is a recrudescence of plague every year, 46,900 natives applied to be vaccinated between Oct. 10 and Dec. 20, 1934. No accident due to the vaccine was observed and the local reactions have never interfered with the daily occupations of the natives. Up to May 10, 1935, twenty-two deaths due to the plague were reported as occurring among those who had been vaccinated, and the general mortality was 225. Among the nonvaccinated (about 60,000 natives) there were 100 deaths from plague (1.66 per cent) and a total of 581 deaths (9.7 per cent). There were other deaths among the nonvaccinated that could not be determined bacteriologically because they occurred in remote districts.

The number of deaths among the vaccinated has been one-fourth that of the nonvaccinated. No case of the primary or secondary pulmonary form has been observed in the vaccinated. Septicemia is also less marked and the "buboes" contain so few visible organisms that it was necessary to make cultures to find them. Vaccination has been a marked step in advance. Its application depends on maintaining unaltered the characters of the EV strain, which up to the present time has not shown any variations.

Culture of the Bacillus of Leprosy

Since 1928, Vaudremer and Brun have been successful in cultures of the bacillus of leprosy. Some of these cultures have been reinoculated over a period of six years. At the June 25 meeting of the Academy of Medicine, the authors reported their results. The bacillus passes through the same stages of evolution as that of tuberculosis; viz., an initial granular form and bacillary nonacidoresistant and acidoresistant forms. These different forms depend on the culture medium and on the age of the cultures. In order that the leprosy bacillus may pass through such a developmental cycle, it is essential to employ the Raulin medium, which has previously been utilized for the culture of Aspergillus fumigatus but in which the elements of the latter have been removed by filtration. The leprosy bacillus, taken from leprous lesions, begins to develop in such a medium. One can then reinoculate it on various mediums and can obtain the characteristic acidoresistant form by inoculation on a 4 per cent glycerin-potato medium.

After two years' study, Vaudremer and Brun found spore formation. The bacillus is agglutinated by the serum of lepers, which kill it in twenty-four hours. A vaccine prepared from the bacillus has given satisfactory results in several clinics (Sezary, Touraine, Milian). Bezançon in the discussion stated that he had been able to obtain some microcultures on a blood-gelose medium but could not obtain a growth on reinoculation.

Duodenal Diverticula and Chronic Pancreatitis

Two cases were reported at the June 19 meeting of the Société de chirurgie by Moure and Mialaret in which the etiologic rôle of diverticula of the second portion of the duodenum on the development of a chronic pancreatitis appears to be proved. The majority of such diverticula are observed on the concave aspect of this part of the duodenum and thus can exert pressure on the common bile and pancreatic ducts and produce a chronic inflammation of the head of the pancreas.

In the first case, a man of 48 had attacks of severe pain during six years at irregular intervals and without any relation to meals. The pain was localized in the epigastric region and radiated transversely. There was temporary relief following the use of belladonna. Radiography revealed a dilated duodenum with gastric stasis. Gastro-enterostomy was performed, as the condition found in the first portion of the duodenum led to the diagnosis of duodenal ulcer. Temporary relief followed, but a second intervention became necessary. At this operation a diverticulum 1 cm. long and the thickness of the adult index finger was freed, followed by a duodenopylorectomy. The head of the pancreas was found enlarged and indurated. Complete cessation of all symptoms followed the operation.

In the second case, radiography revealed a diverticulum of the concave aspect of the second portion of the duodenum in a woman of 31 suffering from recurrent pain in the epigastric region. The diverticulum was freed and inverted, and this was followed by a duodenojejunostomy. There was no recurrence of the attacks of pain.

In the discussion, Baumgartner reported a case of chronic pancreatitis with icterus in a patient with a duodenal diverticulum. At operation the common duct was found dilated and was drained. The relief that was given by that simple drainage led him to believe that there is no relation between the pancreatic and biliary changes and the presence of a duodenal diverticulum.

Biliary Peritonitis Without Visible Perforation of Gallbladder

At the June 26 meeting of the Société de chirurgie, Salmon of Marseilles reported the case of a girl, aged 11 years, who had typhoid of four weeks' duration. The Widal reaction was positive. During her convalescence, sudden severe pain was felt in the right upper quadrant of the abdomen. Appendectomy had been performed when she was 6 years of age and there was a history of recurrent pain in the gallbladder region for a year preceding the attack of typhoid. On admission a diagnosis was made of acute typhoidal cholecystitis accompanied by typical symptoms of peritonitis.

When the abdomen was opened in the gallbladder region (under local anesthesia), bile stained fluid escaped and all the viscera of the upper part of the abdomen were seen to be covered with bile. There was no demonstrable perforation of the gallbladder, and only cholecystostomy was done. Cultures made from the contents of the gallbladder revealed the presence of large numbers of typhoid bacilli. The peritoneal liquid contained only B. coli. Recovery was uneventful. It is probable that the typhoid bacilli in the peritoneal fluid were killed by B. coli, according to the author. Biliary peritonitis without perforation is rare in children. Peritonitis as a complication of a typhoidal cholecystitis is not as rare. The passage of bacilli across the wall of an infected gallbladder is facilitated by the presence of intramural ecchymotic areas such as were found on the surface of the gallbladder in Salmon's case.

BERLIN

(From Our Regular Correspondent)

Aug. 19, 1935.

Meeting of the German Phthisiologists

The annual session of the German phthisiologists brought a number of papers of general interest. (It may be mentioned parenthetically that the combating of tuberculosis was referred to as now constituting a political duty.) Interest attaches to the experiences with the compulsory isolation station located in Thuringia, central Germany. A law of Thuringia, enacted in 1931, provides the application of certain compulsory measures, including restriction of personal liberty, in carrying on its crusade against tuberculosis. This law made it possible to compel tuberculous persons and also suspects to submit to an examination and, if desirable, to force them to accept isolation. As a detention home, in which patients may be kept even against their will, the government of Thuringia equipped a special department of a sanatorium (used otherwise for mental patients), in which, however, the treatment is confined to symptomatic and psychic measures. Since the institution was first opened, seven months ago, seventy-one patients have been admitted, forty-two being involuntary and twenty-nine voluntary inmates. The reasons assigned for such internment were asocial behavior, incorrigibility, homelessness, vagabondage, inadequate home surroundings, lack of domiciliary care, and in all cases the impossibility of segregating these patients other than in a "closed" institution in a manner that would not be a menace to their entourage. The number of tuberculous persons, who constitute a menace to the general welfare and who cannot be handled without compulsory isolation, was estimated by Dr. Heisig of Weimar, the official representative of Thuringia, at from three to four to each 100,000 of population. The application of compulsory isolation is said to have increased the influence of the welfare organizations. In other provinces, or *länder*, to be exact, from fifteen to thirty isolation beds per hundred thousand of population are considered necessary.

Kayser-Petersen of Jena discussed the "Importance of Superinfection in Tuberculous Disorders in Man." The effects of superinfection were described by reference to observations within the family (tuberculous infection in spouses being especially important), in the schools, in caring for tuberculous persons, in industrial plants and in health resorts for lung patients. The effects of superinfection on married couples are revealed by the statement that in about 10 per cent of married persons active tuberculosis occurs. Superinfection acts in marriage relationship commonly in the direction of an accentuation rather than a breakdown of resistance. Among the care-taking personnel the action of superinfection is confined to an increase of the tuberculin skin reaction. A lowering of the hygienic conditions leads to an increased morbidity. Superinfection is an important factor in tuberculous disorders. In some respects it has a favorable, protective, immunizing action, but in some cases, particularly in young children, it may, in an especially contaminated environment, have an injurious effect.

Among the special topics that were discussed, mention may be made of "Pregnancy in Relation to Tuberculosis," which was presented by Professor Hansen of Lübeck. His extensive research on the course of tuberculosis in women furnished no proof for the commonly accepted view that pregnancy exerts an unfavorable influence on the course of tuberculosis. He found that the course of tuberculosis can undergo a favorable or an unfavorable change during pregnancy. The treatment for pregnant tuberculous persons is the same as for the nonpregnant. Hansen is of the opinion that, as a rule, the interruption of pregnancy on account of tuberculosis should be refused. Only in rare cases it might be indicated, when, in case the pregnancy was not interrupted, the application of a rational tuberculosis therapy would be impossible. The children of tuberculous mothers are biologically equal to the children of healthy mothers of the same milieu. The intra-uterine infection does not play an important part.

In the discussion, Lydtin of Munich reported that in a series of nineteen pregnant tuberculous women thirteen died within a year. Braeuning of Stettin, who has had wide experience as a phthisiologist, called attention to the grave struggles of conscience that face the physician called on to decide as to the need of an interruption of pregnancy. According to his observations, an exacerbation of the tuberculosis occurs, after completion of a pregnancy, in about 6 per cent of the women.

Average Duration of Hospitalization

As reported by Dr. Ernst Meier of the federal bureau of health, there were 3,961,734 patients cared for in the hospitals of Germany in 1932, according to the hospital statistics for the German reich. The total number of days of hospitalization was 155,731,207. The total number of beds at the beginning and at the end of 1932 was 592,805. If that number is multiplied by 366, the number of days in the year, one gets 216,966,630 as the number of available days of hospitalization. Subtracting the number of actual days of hospitalization, it will be seen that 61,235,423 potential days of hospitalization were unused.

From the three units the number of patients cared for, the number of days of hospitalization, and the number of sick-beds, a survey of the relative utilization of the hospitals can be secured. In reality, however, the utilization of the hospital is subject to many irregularities. From computations made as accurate as possible, the following values for the hospitals of Germany in 1932 have been secured:

Days of hospitalization	155,731,207
Vacant days	61,235,423
Number of patients admitted	3,574,022
Number of patients dismissed	3,573,242
Patient turnover (average of admissions and dismissals)	3,573,632
Average duration of hospital stay	44 days
Vacant days per patient on basis of patient turnover	17 days

These computations are only a rough estimate, since they are based on the supposition that the flow of patients through the hospitals is always uniform. They furnish, however, a basis for the important question of the potential utilization of the beds with a given average number of days of hospitalization per patient. Since bed vacancies arise chiefly when there is a change of patients, the beds are better utilized, the longer the average hospital stay of the patients is. An institution that, from the nature of its function, must count on short hospitalization periods will always find it impossible to keep all its beds occupied; for all the fluctuations in the admissions due to the seasons and to changing epidemiologic and economic conditions affect the percentage of occupancy. On the other hand, institutions with long hospitalization periods, in which the annual admissions in comparison with the total number of patients are small in number, are much less affected by such fluctuations. Recently published hospital statistics for the German reich classify the hospitals according to their fields of endeavor. For the year 1932 the report contains statistics on 4,958 independent institutions (administrative units), which, however, are classified, according to their fields of activity, under 6,662 "institutions and departments." The institutions for the weakminded are far in the lead numerically. The average period of hospitalization for a weakminded person is five and one-half years. The average number of days that a sick-bed remains vacant, when a weakminded patient is dismissed, is eight months; but there are wide variations. Aside from the institutions for the feebleminded, the only institutions whose patients have an average hospitalization period of more than one year are the psychopathic hospitals and the departments for mental patients.

A high number of vacant days for a change of patient is recorded for the institutions for alcohol addicts (seventy-nine

days) and for tuberculous children (seventy-five days). The smallest number of vacant days following a change of patient, and at the same time one of the highest numbers of vacant days to a sick-bed, were recorded for the maternity departments. This is explained by the fact that parturients constitute the group having the shortest period of hospitalization of any individual patients. An obstacle to a more complete utilization of sick-beds arises if an institution must be prepared in an emergency to accommodate temporarily a much larger number of patients than normally. Hence, among the institutions having a high number of vacant days per sick-bed are many that are compelled to have available a large number of beds in isolation wards for the benefit of contagious patients. The largest proportion of beds in isolation wards are found in the institutions and departments for cutaneous and venereal diseases (16 per cent of such beds, as of Dec. 31, 1932). The next highest figures are found in the institutions for tuberculous adults and for sick infants and children (each group 13 per cent), the institutions and departments for tuberculous children, and the sick-wards in the prisons (each group 9 per cent), and the general hospitals (7 per cent). The total number of beds in isolation wards for contagious patients was 21,121, 12,333 of which were in general hospitals.

Many types of institutions must be ready to serve independent of the nature of the permanent need, since no other institutions are available to the community; for example, the smaller general hospitals in the rural districts. Their low percentage of occupancy may have contributed in no slight degree to the fact that for the totality of general hospitals, in 1932, 135 vacant days (four and one-half months not in service) per bed were recorded. Similarly, the sick-wards in prisons are necessary, although the percentage of occupancy is low. For these sick-wards the maximal figure of 190 vacant days per sick-bed is recorded, or a higher percentage of vacant days than of occupied days.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1935.

The Sanitary Service in a Future War

Prof. Filippo Caccia, "generale medico" in the army medical corps, discussed recently "The Sanitary Service in a Future War," at a conference of medical and military officers. The speaker held that the technical improvements and motorization will result generally in a "war of movement" in which aeronautics, chemical attacks and possibly bacteriologic attacks will be highly developed. It is desirable, during peace time, to develop the prophylactic and therapeutic agents best adapted to conserve the fighting forces. Prophylactic vaccinations, which were tried successfully in the World War, will be certain to become more highly developed in future wars. The better hygienic organization of the armies in the field has reversed the relationship of the number of persons killed in action and dying of wounds, on the one hand, and the number of persons dying from disease. In the Crimean War, for example, five soldiers died from disease for each one killed in action or dying from wounds. In the World War, eight died in action or from wounds for each one who died from disease.

The organization of therapeutic facilities in time of war is a complex task and comprises three distinct functions: preparation, transportation and hospitalization. Chemical warfare, used in aviation not only at the front but also far in advance of the front, imposes new problems of a sanitary nature. According to General Caccia, all physicians should be compelled to take at the university such courses as will fit them to meet the needs of the new situation that has arisen. Warfare at the front necessitates light motorized hospital units, easy to rig up and to unrig, and with standardized parts, so that if one part is destroyed a corresponding part of another unit can be substituted. In proximity to the front, light motor ambulances will be needed, but better still would be screened motor litters, thereby reducing to a minimum transportation by man power only. In mountain warfare, sledges and a telepherage system are indispensable.

The time factor is of paramount interest in connection with a rational mode of treatment. Some lesions (abdominal, thoracic, grave wounds of the lower limbs) require a very comfortable and relatively short transportation period—not longer than eight or ten hours. Patients with cranial, osteo-articular or spinal lesions can endure a longer transportation period—from twenty-four to thirty hours from the time of the trauma. General Caccia emphasizes the need of adequate preparation on the part of physicians in the type of medical service encountered in war. At present only about one fourth of the physicians pass through the Scuola di sanità militare, after leaving the university.

The Gastro-Enterologic Society

The Società di gastroenterologia held recently its second session in Rome, under the chairmanship of Prof. Cesare Frugoni, director of the Clinica medica in that city. Lucherini of Rome reported the results of his cholecystographic research on the mechanism of the contraction of the gallbladder. He found that sodium chloride (10 cc. of a 10 per cent solution) introduced from ten to fifteen minutes after an injection of 3 Gm. of tetiothalein sodium enables the examiner to procure roentgenograms of the gallbladder in from fifteen to twenty minutes after the injection. He tested the cholecystokinetic action of calcium chloride and found that, following the intravenous injection of that salt, the gallbladder, after from fifteen to twenty minutes, shrinks evidently but resumes its size, form and former opacity when the action of the drug has passed. The mechanism of rapid cholecystography is based chiefly on the stimulus exerted by the various drugs introduced with the tetiothalein sodium on the functional activity of the liver cells.

Bonadies of Rome presented a paper on syphilitic gastritis. He emphasized the advisability of examining patients for syphilis in the presence of gastritis that does not respond to ordinary treatment.

Sebastianelli of Rome reported the results of research on the bactericidal potency of the gastric and the duodenal juices in gastro-intestinal disorders. The bactericidal potency of the duodenal juice is often distinctly different from that of the gastric juice and is always absent in diabetic patients and in 95 per cent of persons with gallbladder disorders.

Crosetti and Bajardi of Siena, on the basis of experiments on the albino rat, conclude that the injection of gastric juice of healthy persons or, commonly, of persons not affected with pernicious anemia, causes a reticulocytic reaction in most of the rats. The phenomenon is absent in the majority of rats into which is injected the gastric juice of patients with pernicious anemia.

Alessandrini of Rome described the behavior of gastric acidity following the introduction of solutions of hydrochloric acid of various concentrations. He found that in employing concentrations up to twenty times that of the physiologic solution an autoregulation of the gastric acidity occurs which corresponds to that obtained by other stimuli. If the degree of acidity goes beyond a certain point, vomiting is produced.

The same speaker carried on research on factors that effect an evacuation of the stomach, the gallbladder and the ileum. The evacuation is determined in part by stimuli applied directly to the pilleus ventriculi, which constitutes, to a certain extent, the regulatory center of the motility of the digestive apparatus.

Attili and Bonadies discussed the radiologic aspect of the gastric folds. Gastroscopy supplies evidence on the color and opacity of the gastric mucosa, and on the presence of endog-

enous mucus and small ulcerations, which radioscopy cannot demonstrate. Radioscopy, on the other hand, allows complete exploration of the whole organ, including those parts that the instrument cannot explore. If one desires to make a precise diagnosis of stomach disease, it is necessary to combine the two methods.

MOSCOW

(From Our Regular Correspondent)

Sept. 15, 1935.

The Fifteenth International Congress of Physiology

A series of interesting reports were read at the plenary and sectional meetings of the fifteenth International Congress of Physiology.

PLENARY SESSIONS

The first plenary session was held in Leningrad August 9. After salutatory addresses made by government representatives and scientific organizations, the president, academician Ivan P. Pavlov, opened the congress. Professor Walter W. Cannon (Harvard Medical School, Boston) read the first introductory paper, on chemical transmission of nervous impulses. After a review of the principal investigations of chemical transmission of excitability, Professor Cannon showed that the irritation may lead to inactivity of the nerve, the inhibition being due to humoral transmitters, particularly sympathin.

At the second plenary session, August 11, the addresses of academician Leon A. Orbeli (Leningrad) and Prof. Joseph Barcroft (Cambridge) were read.

Professor Orbeli's address was devoted to the subject of pain. He cut the sciatic nerves of animals and observed how sensitiveness was restored.

At first the ancient phylogenetic sensitivity of pain was reestablished, somewhat higher than usual. Later tactile sensitivity was restored. Pain is attended by changes in the excitability of corresponding tissues. The vegetative functions depend not only on reflexes but also on hormone influences, particularly on the hormone of the posterior lobe of the hypophysis.

Sir Joseph Barcroft presented an address on the velocity of some physiologic processes. He studied the time factor in the reaction between oxygen and respiratory ferments. The separation of carbon monoxide from hemoglobin is some hundred times faster than the restoration of oxygen to hemoglobin. The hemoglobin in the muscular tissue of the heart reacts much faster than blood hemoglobin. The time required for its oxidation is 0.001 of a second and for its restoration only 0.0001 of a second. The oxidative processes occur with great rapidity in mice and canaries, owing to the cytochrome ferment.

The last plenary session was held in Moscow August 17. The first paper: "Some Factors in Physiologic Processes" was delivered by Prof. Louis Lapicque, of the Institut de France, Sorbonne, Paris. He stated that chronaxia (the coefficient which represents the relation of tissues to the combined effect of intensity and duration of electrical stimuli) is not equal for different muscles. In the case of men the processes that regulate the flexor motions pass with greater velocity than the extensor ones. When this distinction is abolished there is a supplementary loss of coordination, which is found when lesions of the cerebral cortex are present.

The last address at the Moscow plenary session, made by academician A. A. Ukhtomsky of Leningrad, was devoted to physiologic lability and inhibition. He established the dominant theory; i. e., the principal tendency of excitation inhibits other processes in the organism, or the dominant suppresses a less vigorous excitation.

SECTION ON NERVOUS HUMORAL REGULATION

Prof. Walter W. Cannon spoke on the comparative effect of epinephrine and sympathin on the pupil.

Leon Binet and B. Minz (chair of physiology, Faculté de médecine de Paris) discussed changes in the nerve after electrical irritation. In the trunk of the vagus nerve of a dog, acetylcholine is present. An extract from a reflexly irritated vagus of a dog has the properties characteristic of an extract of a nerve directly stimulated by electric current. Prof. K. M. Bicov (Leningrad) discussed chemical transmission of excitability in the central nervous system. A depressive effect is obtained when blood flowing from the cerebrum during irritation of the depressor nerve is collected and afterward injected into the carotid artery. This effect is not present when blood collected without the irritation is injected because it does not contain acetylcholine-like substances.

A. V. Kibijakov from Kazan reported on the humoral transmission of excitability in the sympathetic ganglion. The extract obtained after the ganglion had been excited, when tested on the heart, was similar to acetylcholine. Simultaneously a epinephrine-like effect was seen.

Prof. J. N. Chukichev (Moscow) spoke on the oligodynamic action of albumin on different systems. Products of intensive acid hydrolysis of albumin are highly active. They reestablish the activity of a tired muscle, produce a hypersecretion of maxillary glands, change the secretion of gastric glands, depress the tonus of the intestine and change the excitability of the cortex. Chukichev supposes that sympathin is a product of albumin metabolism.

SECTION ON THE CENTRAL NERVOUS SYSTEM

Prof. G. Kato, Z. Kaku and J. Tasaki from Keio Gijuku University Medical College, Tokyo, Japan, spoke on the excitation and inhibition of reflexes by the same afferent fiber. On a cerebrospinal preparation of a cat, a single fiber beginning in the sole provokes the flexor reflex on the same side and inhibits the extensor reflex in the vastus, soleus and gastrocnemius muscles of the opposite side, if adequate excitation is used.

In addition Kato and his nine assistants demonstrated, on toads brought from Japan, experiments on the activity of nerve fibers. He isolated a single sciatic nerve fiber, which gave after excitation a muscular contraction. Bowditch's law "all or nothing" was brilliantly confirmed by these experiments demonstrated at the congress. Prof. J. F. Fulton of Yale University School of Medicine, New Haven, Conn., removed different parts of the premotor zone of the cortex in monkeys and observed the effects. He concluded that motor somatic and autonomic symptoms cannot be connected with any definitely localized area of the cortex. Dozent N. J. Propper (Moscow) reported an experimental study on the pathogenesis of epilepsy. He concludes that epileptic attacks are accompanied by complete disorganization in the cortex of the processes of stimulation and inhibition.

Prof. Mario Gozzano of Naples, Italy, presented supplementary data on this question. He showed that during strychnine saturation of motor areas the bio-electrical waves are attended by clonic convulsions. At the moment of attack the balance between separate processes is disturbed and sharp variations in the electrical phenomena are seen. It is possible to induce epilepsy of reflex origin as a result of afferent impulses.

SECTION ON THE ENDOCRINES

Prof. K. J. Anselmino of the Frauenklinik der Universität, Düsseldorf, Germany, discussed the hormones of the hypophysis that influence fat and carbohydrate metabolism and their increased amounts in the blood and urine of diabetic patients. The carbohydrate hormone reduces the quantity of glycogen and nonsaturated fatty acids in the liver of the rat. These two hormones can be obtained from urine of diabetic patients.

Benjamin Harrow, J. M. Chamelin and A. Mazur from the College of the City of New York came to the same conclusions. Their report was entitled "The Hormones of Fat Metabolism and Hyperglycemia." They obtained a substance from male urine which produced hyperglycemia in rabbits. It con-

tains two factors: one which diminishes the blood sugar and a second which augments it.

Hans Selye read a paper by J. B. Collip of McGill University, Montreal, on antihormones, substances with antagonistic effect which appear after injection of one of the hypophyseal hormones. Antihormone has not been obtained in pure form. Collip finds that endocrine disturbances must be explained not only by insufficiency of certain hormones but by an excess of antihormones.

Prof. N. B. Medvedeva, Kiev, spoke on the specific hormone of the adrenal cortex which calls forth a marked hyperglycemia (by parenteral administration).

Donald G. Marguis and Ernest R. Hilgard of Yale University reported on conditioned visual reflexes of dogs and monkeys after removal of the optical region of the cortex. They obtained a conditioned reflex by closing the eyelids under the influence of weak light, after removal of both occipital parts of the cortex. The reflex could be produced after the operation as easily as before it. The paper called forth a lively discussion.

A. Chauchard, B. Chauchard and W. Drabovitch of Paris made quantitative examinations of the excitability of peripheral neurons during conditioned reflexes. Chauchard's experiments show the influence of cerebral activity on the peripheral excitability.

SECTION OF BIOCHEMISTRY

Prof. Emil Abderhalden of Halle, Germany, reported on the rôle of protective proteins in the differentiation of albumins. After the injection of different albumins, protective ferments appear in the blood. If known groups, such as iodine, are introduced in the albumin, the organism reacts to them specifically. By parenteral administration of polypeptides, it becomes possible to form protective substances that can cause the destruction of an administered substratum.

Prof. Felix Haurowitz of Prague spoke on the blood pigment.

Prof. Ettore Biocca of Rome spoke about crystallization of carboxyhemoglobin. Crystals of restored hemoglobin may be obtained even from blood shed as long as ten days before. If after dissolution and mixture with carbon monoxide the blood does not form carboxyhemoglobin, it does not belong to the human type.

OTHER SECTIONS

Prof. V. J. Skvorzov addressed the section on pharmacology on the principles of antitoxic action. A dog that is given a lethal dose of hydrocyanic acid will survive if within three to four minutes he receives an injection of 30 per cent dextrose or of 8 to 10 per cent sodium bicarbonate solution. Similar results were obtained in the treatment of alcohol, arsenic and other intoxications.

The section on pharmacology passed a resolution to form an organization to be called the International Pharmacologic Society.

C. M. McCay and his collaborators of Cornell University, Ithaca, N. Y., at the meeting of the section on cellular physiology spoke about the influence of retarded growth on longevity. Rats with retarded growth live much longer than control animals and their hearts are larger and their livers smaller than are those of the control rats.

Prof. Klaus Hansen of Oslo tested the biologic properties of heavy water. It has a sweetish and metallic taste. A big dose taken once is innocuous to men and animals. The continued use of heavy water leads to paralysis and death.

Sir Joseph Barcroft and D. H. Barron of England spoke on the beginning of respiration at birth. The cause of the first respiration is oxygen insufficiency. It can be produced artificially by the change of hemoglobin into methemoglobin by the introduction of hydroxylamine into the umbilical vessels. This experiment, made by Sir Joseph on a gravid sow, made a great impression on the congress.

About 1,500 physiologists from all over the world were present at the congress. An exposition demonstrating the progress of soviet physiology was organized for the congress. A silver medal of the Russian physiologist Schenov was presented to every delegate. A trip to Coltuchi, which is not far from Leningrad, where Pavlov's laboratories are located, was organized.

About twenty-two scientific films were shown, many of which were prepared in Pavlov's laboratories.

A reception for the delegates was given by V. M. Molotov, the president of the Soviet of People's Commissars.

At the close of the congress most of the delegates went on trips throughout the Soviet Union.

Prof. Alexander Hill of London proposed that the sixteenth International Congress of Physiology be held in 1938 in Zurich, in connection with the fiftieth anniversary of the first congress of physiology held in 1888 in that city.

Street Noises

Research on noise began in Leningrad and Moscow in 1934. The greatest noise heard at Leningrad measured 80 and the least 45 decibels and was equal to that of the noisiest streets of New York.

The research demonstrated that in Leningrad the principal noises are due to street cars, motor car signals, loud speakers in the streets and bad pavements. Trees are very effective in diminishing street noises.

The measurement of noise in Leningrad street cars demonstrated that the average noise in the motor part of the car measured 67 decibels at full speed and 60 at slow speed.

The constant increase in traffic in this country makes the problem of street noise very acute.

Special regulations for combating unnecessary noise will be made soon, and measures will be taken for the absorption of sounds such as trees planted along the streets, and paving with wood blocks and asphalt, and the prohibition of the use of horns at night.

Marriages

JOHN ALARGO ALEXANDER, Murfreesboro, Tenn., to Miss Bessie Lois Ward of Cleveland, in Shelbyville, Tenn., August 6.

MERVYN HENRY LITTLE, Willimantic, Conn., to DR. OLGA ALEXIYEUNA GAVRILUK of Lawrence, Mass., June 8.

WYCLIFFE CHARLES JACKSON, Jenkinjones, W. Va., to Miss Mary Stuart McCallum, Rowland, N. C., June 1.

JOHN H. PINHOLSTER, Savannah, Ga., to Miss Kathryn Shurmpert White of Jacksonville, Fla., June 30.

JEFFERSON NEAFIE RICHARDSON, Atlantic City, N. J., to Miss Margaret Allen Pole of Philadelphia, July 24.

EDGAR H. MACKINLAY, McConnellsburg, Pa., to Miss Helene Davis Brown of Altoona, July 8.

CHARLES W. STRAUB, Middleburg, Pa., to Miss Dorothy Showalter of Mifflinburg, June 19.

RICHARD L. SUTTON JR. to Miss Serena Anne Neel, both of Kansas City, Mo., September 28.

DONALD F. MARION, Harrisburg, Pa., to Miss Mabel Floyd of Fairmont, N. C., August 28.

THOMAS P. BRINN, Hertford, N. C., to Miss Mary Emfry Glasson of Durham, August 20.

BYRON I. MUELLER, St. Charles, Iowa, to Miss Flora Estelle Otto of Carroll, August 12.

VIRGIL LEONIDAS KELLY, Charlottesville, Va., to Miss Alberta Worrell of Otey, June 11.

VICTOR E. BURN to Miss Eloise Conner Roe, both of Newton, N. J., September 4.

LEON EDWARD BRAWNER to Miss Thelma Clements, both of Atlanta, Ga., July 25.

CLYDE J. BIBB, Portage, Pa., to Miss Katharine Vogel of Scalp Level, recently.

RALPH D. CRESSMAN to Miss Bernice M. Klein, both of San Francisco, August 14.

HERBERT L. BRUMBAUGH, Dayton, Ohio, to Miss Sara Isabelle Ross, September 27.

Deaths

William Francis Honan ✠ New York; New York Homeopathic Medical College and Hospital, 1889; professor of surgery at his alma mater; fellow of the American College of Surgeons; served during the World War; attending surgeon to the Flower Hospital; attending surgeon and director of the department of thoracic surgery, Metropolitan Hospital and Sea View Hospital; consulting surgeon to the Carson C. Peck Hospital, Brooklyn, and the Fifth Avenue Hospital; aged 68; died, October 6, of heart disease, while playing golf at Huntington, N. Y.

Herbert Phalon Cole ✠ Mobile, Ala.; Johns Hopkins University School of Medicine, Baltimore, 1906; member of the Southern Surgical Association; fellow of the American College of Surgeons; formerly associate professor of gynecology, University of Alabama School of Medicine; past president of the Mobile County Medical Society; aged 55; died, September 27, in the Victoria Hospital, Miami, Fla., of sepsis, following an infection under his finger nail.

George Frederick Stericker ✠ Springfield, Ill.; University of Leeds School of Medicine, and M.R.C.S., England, 1883; L.M.S.S.A., London, 1884; past president and secretary of the Sangamon County Hospital; for many years president of the Springfield Tuberculosis Association; on the staffs of St. John's Hospital and the Springfield Hospital; aged 73; died, September 14, of subacute bacterial endocarditis.

William James Hickson ✠ Chicago; University of Pennsylvania Department of Medicine, Philadelphia, 1900; director of the medical research department, Training School, Vineland, N. J., 1912-1915; psychopathologist to the psychopathic laboratory of the Municipal Court of Chicago, 1914-1929; aged 61; died, October 4, of heart disease, while at his summer home in Gloucester, Mass.

Byron Webster Beatty ✠ Dayton, Ohio; Ohio Medical University, Columbus, 1905; member of the Clinical Orthopedic Society; for many years on the staff of St. Elizabeth's Hospital; aged 52; one of the founders and first chief of staff of the Good Samaritan Hospital, where he died, September 15, of disease of the gallbladder.

Theodore Senseman ✠ Margate City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; fellow of the American College of Surgeons; served during the World War; aged 60; medical director of the Atlantic City Hospital, where he died, September 8, of chronic pulmonary tuberculosis.

Ezra Z. Derr ✠ Medical Director, Captain, U. S. Navy, retired, Frederick, Md.; University of Virginia Department of Medicine, Charlottesville, 1870; University of the City of New York Medical Department, 1872; entered the navy in 1873 and retired in 1910; aged 84; died, August 24, of coronary occlusion.

Lefferts Hutton, New York; Columbia University College of Physicians and Surgeons, New York, 1905; assistant medical director of the Mutual Life Insurance Company of New York; served during the World War; aged 55; died suddenly, August 14, of coronary embolism, at his home in Millburn, N. J.

Everell Verni Chadwick, Eldred, Pa.; George Washington University School of Medicine, Washington, D. C., 1917; served during the World War; formerly connected with the U. S. Public Health Service and the U. S. Veterans' Bureau; aged 43; died, August 18, at Camptown, Pa.

George Mitchell Eckel ✠ Hot Springs National Park, Ark.; University of Texas School of Medicine, Galveston, 1908; member of the American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; aged 50; died, September 17, of angina pectoris.

Clarence Edward Lum, Nisswa, Minn.; Minnesota Hospital College, Minneapolis, 1885; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; aged 73; died, September 7, in St. Joseph's Hospital, Brainerd, of coronary thrombosis.

Daniel Carr Main, Pomona, Fla.; Hahnemann Medical College and Hospital, Chicago, 1902; veteran of the Spanish-American and World wars; formerly on the staff of St. Elizabeth's Hospital, Washington, D. C.; aged 59; was killed, September 2, in the hurricane.

David James King, Williamsburg, Va.; University of Buffalo School of Medicine, 1900; member of the Medical Society of Virginia; for many years physician to the William and Mary College; aged 71; died, August 18, of cerebral hemorrhage and hypertension.

William Hubley Herr ✠ Lancaster, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; served during the World War; on the staff of the Lancaster General Hospital; aged 62; died, August 25, of chronic valvular heart disease.

Werner Lothar Benishek ✠ Aurora, Ill.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1926; director of the x-ray department of the Copley Hospital; aged 33; was found dead, September 30, of poison, self-administered.

George Simonton Means, Jacksonville, Fla.; Southern Medical College, Atlanta, Ga., 1895; Tulane University of Louisiana School of Medicine, New Orleans, 1902; aged 65; died, August 14, of hemiplegia, arteriosclerosis and hypertension.

Irvin Pope Sr., Tyler, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1887; member of the State Medical Association of Texas; fellow of the American College of Surgeons; aged 73; died, August 20.

Charles Henry Miller, Washington, Kan.; St. Louis University School of Medicine, 1913; aged 46; on the staff of the Veterans Administration Facility, Lincoln, Neb., where he died, August 15, of cerebral hemorrhage and arteriosclerosis.

James Charles Holdsworth, Chicago; College of Physicians and Surgeons, Baltimore, 1896; served during the World War; aged 64; died, August 17, in the Veterans Administration Facility, Hines, Ill., of subacute bacterial endocarditis.

Bertram Gottlieb, Huntington, N. Y.; Tufts College Medical School, Boston, 1924; member of the Medical Society of the State of New York; aged 37; died, September 19, in the New York Hospital, following an infection of the nose.

Lee Herbert Smith, Buffalo; University of Buffalo School of Medicine, 1877; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881; aged 79; died, September 18, of angina pectoris.

Homer Powers ✠ Rankin, Texas; American Medical College, St. Louis, 1877; past president of the Crane-Upton-Reagan Counties Medical Society; aged 79; died recently, of chronic nephritis and hypertrophy of the prostate.

James Patterson Ziegler, Elizabethtown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 86; died, August 14, of senility.

William Henry Tassell, Coudersport, Pa.; College of Physicians and Surgeons, Baltimore, 1883; member of the Medical Society of the State of Pennsylvania; aged 79; died, September 5, of intestinal obstruction.

Benjamin Azum Caudle, Hopkinsville, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; member of the Kentucky State Medical Association; aged 66; died, August 30, of cerebral hemorrhage.

Raymond Robinson Hume, Minco, Okla.; University Medical College of Kansas City, Mo., 1906; member of the Oklahoma State Medical Association; aged 55; died, August 11, of cirrhosis of the liver.

Ephraim Weston Morgan, Memphis, Tenn.; Bellevue Hospital Medical College, New York, 1871; Confederate veteran; aged 88; died, August 18, of arteriosclerosis and hypertrophy of the prostate.

Carl Mindlin ✠ Haverhill, Mass.; Long Island College Hospital, Brooklyn, 1912; aged 50; died, August 20, at McKinley Hospital, Trenton, N. J., of sarcoma of the left axilla, lungs and brain.

Joseph Machesney Spang, Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1908; aged 55; died suddenly, August 15, in the Homeopathic Medical and Surgical Hospital.

David Oral Beal, Afton, Wyo.; College of Physicians and Surgeons, Baltimore, 1912; served in the British army during the World War; aged 47; died, August 16, in Montpelier, Idaho, of pneumonia.

John Bruff Boothe, Philadelphia; Howard University College of Medicine, Washington, D. C., 1935; intern at the Mercy Hospital; aged 34; died, September 26, of malignant hypertension.

Merritt William T. Negus, Rochester, N. Y.; University of the City of New York Medical Department, 1879; aged 80; died, August 3, of a skull fracture received when hit by an automobile.

Harvey Louis Langlois ✠ Kankakee, Ill.; University of Illinois College of Medicine, Chicago, 1917; aged 44; on the staff of St. Mary Hospital, where he died, August 22, of pneumonia.

Bigelow Putnam Blackstone, Houston, Texas; State University of Iowa College of Homeopathic Medicine, Iowa City, 1899; veteran of the World War; aged 64; was found dead, August 30.

William Drake Hamilton, Columbus, Ohio; Columbus Medical College, 1883; fellow of the American College of Surgeons; aged 76; died, August 23, in Cape Cod, Mass., of heart disease.

William Young Fowler, Llano, Texas; Memphis (Tenn.) Hospital Medical College, 1895; aged 75; died, in August, at a hospital in Austin, as the result of injuries received in a fall.

William Penn Fawcett, Alderson, W. Va.; Hospital College of Medicine, Louisville, 1902; member of the West Virginia State Medical Association; aged 74; died, September 4.

Ray Ferguson, Escatawpa, Miss.; Kansas City (Mo.) Medical College, 1899; aged 67; died, August 5, in the Jackson County Hospital, Pascagoula, of estivo-autumnal malaria.

Charles William Stramberg, Trenton, N. S., Canada; Halifax Medical College, 1910; aged 55; died, May 18, in the Aberdeen Hospital, New Glasgow, of pernicious anemia.

T. Howard Knight, Los Angeles; University of the South Medical Department, Sewanee, Tenn., 1895; aged 76; died, August 23, of coronary thrombosis and angina pectoris.

Samuel P. Reser, Hartford, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; member of the Kansas Medical Society; aged 84; died, August 6, of senility.

Edward W. D. Abner, Denver; Meharry Medical College, Nashville, Tenn., 1893; aged 68; died, August 27, in the Denver General Hospital, of an accidental gunshot wound.

Harvey Milton Fults, Carter, Ky.; Kentucky University Medical Department, Louisville, 1901; aged 64; was found dead in bed, August 29, of chronic vaivular heart disease.

Max Darius Wilson ✠ Chicago; Bennett Medical College, Chicago, 1912; aged 62; died, October 6, in the Jackson Park Hospital, of carcinoma of the colon with metastasis.

John Theodore Hulskamp ✠ Louisville, Ky.; University of Louisville Medical Department, 1909; aged 53; died, August 24, in St. Joseph Infirmary, of chronic nephritis.

John F. Burleson, Grand Rapids, Mich.; University of Michigan Department of Medicine and Surgery, 1906; aged 57; died, September 8, of chronic myocarditis.

James Davis Moorhead, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1913; aged 43; died suddenly, August 21, of cerebral hemorrhage.

Allen G. Thurman Childers ✠ Mulhall, Okla.; Ensworth Medical College, St. Joseph, Mo., 1890; aged 71; died, August 21, of sarcoma of the neck.

Duncan George Cameron, Windsor, Ont., Canada; Trinity Medical College, Toronto, 1904; died, August 18, of injuries received in an automobile accident.

Franklin Timothy Knox, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1873; aged 88; died, August 19, in Ferguson, of arteriosclerosis.

Jesse Malcolm Henry, Sadieville, Ky.; Medical College of Ohio, Cincinnati, 1886; aged 73; died, August 24, of arteriosclerosis and diabetes mellitus.

M. P. Lyla Harker, Oak Park, Ill.; Loyola University School of Medicine, Chicago, 1923; aged 48; died suddenly, July 27, of cerebral hemorrhage.

William Jarman Hughes, Moscow, Ohio; Kentucky School of Medicine, Louisville, 1890; aged 74; died, August 11, of coronary thrombosis.

Ivar Leif Lefsrud, Viking, Alta., Canada; University of Alberta Faculty of Medicine, Edmonton, 1931; aged 34; died, July 16, at Sterco.

George Frederic Floyd, Birdsnest, Va.; College of Physicians and Surgeons, Baltimore, 1883; aged 77; died, August 29, of myocarditis.

Alexander Vertes, Louisville, Ky.; St. Louis College of Physicians and Surgeons, 1902; aged 65; was found dead, August 2.

William Hamilton Ehlen, Seattle; University of Oregon Medical School, Portland, 1890; aged 69; died, August 22.

Silas S. Burns, Bethel, Pa.; Jefferson Medical College of Philadelphia, 1885; aged 86; died, August 13.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Griscom's Family Liniment.—Steelman & Archer, Inc., successors to Griscom Mfg. Co., Philadelphia. Composition: Essentially an emulsion of ammonia, fatty acids, soap, turpentine oil, volatile oils including camphor, and water. Fraudulent therapeutic claims.—[*N. J. 22583; February, 1935.*]

Vagitone.—Vincent Laboratories, Texarkana, Texas. Composition: Glycerin, boric acid, phenols, small amounts of zinc oxide, quinine sulphate, thymol and oxyquinoline sulphate, and water, dyed green. For female disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22597; February, 1935.*]

Blis-To-Sol.—Blis-To-Sol Co., Fitzgerald, Ga. Composition: Essentially salicylic acid, boric acid, alcohol (61 per cent by volume), acetone, wintergreen, glycerin and water, with a yellow dye. For skin disorders, piles, etc. Fraudulent therapeutic claims.—[*N. J. 22600; February, 1935.*]

Kelfood.—Protective Diet League, Hollywood, Calif. Composition: Tablets containing seaweed, a small amount of fatty oil, and yeast. For infections, sterility, goiter, asthma, glandular disorders, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 22601; February, 1935.*]

Jo-Lova Tea.—Paraguay Tea, Inc., Miami, Fla. Composition: Yerba mate (ordinary Paraguay tea). For anemia, stomach disorders, rheumatism, alcoholism, etc. Fraudulent therapeutic claims.—[*N. J. 22602; February, 1935.*]

Martin's Herb Tablets.—Martin Herb Co., Pittsburgh. Composition: Ground plant material. For stomach, kidney, liver, blood, skin and respiratory disorders, rheumatism, female complaints, etc. Fraudulent therapeutic claims.—[*N. J. 22603; February, 1935.*]

East India Injection.—East India Medicine Co., St. Louis. Composition: Small amount of berberine alkaloid dissolved in water. For venereal diseases. Fraudulent therapeutic claims.—[*N. J. 22605; February, 1935.*]

Cholerine.—East India Medicine Co., St. Louis. Composition: Essentially extracts of plant drugs, including red pepper, small amounts of camphor and chloroform, alcohol (about 6 per cent), sugar and water. For diarrhea, cholera morbus, colic, etc. Fraudulent therapeutic claims.—[*N. J. 22605; February, 1935.*

Bloodzone and Bloodzone Special.—East India Medicine Co., St. Louis. Composition: (Bloodzone) Essentially small amounts of plant drug extracts, including licorice, with alcohol (15.4 per cent by volume), sugar and water; (Bloodzone Special) essentially plant drugs, potassium iodide, alcohol, sugar and water. Bloodzone for impure blood; Bloodzone Special for skin diseases, syphilis, eczema, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 22605; February, 1935.*]

Fresca Antiseptic Powder.—Fresca Co., Lansing, Mich. Composition: Essentially boric acid, alum, and small amounts of phenol and oil of peppermint. Not antiseptic, as represented. For female troubles, hemorrhoids, abscesses, "athlete's foot" and ringworm. Fraudulent therapeutic claims.—[*N. J. 22610; February, 1935.*]

Tona Spaf.—Sunshine Pharmaceutical Co., Inc., New York. Composition: Essentially iron and phosphorus compounds, with traces of an arsenic compound, with alcohol, water and flavoring. For influenza, anemia, diabetes, blood disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22612; February, 1935.*]

Apple-Lax.—Apple Concentrates Corp., New York. Composition: Phenolphthalein and concentrated apple juice, with sugar coating and red color. Laxative. Misbranded because the laxative element was a synthetic one, the drug phenolphthalein. False and misleading claims.—[*N. J. 22614; February, 1935.*]

Iodegrin.—Bundt Laboratories, Inc., Detroit. Composition: Essentially ammonium iodide, extracts of alkaloid-bearing plant drugs, alcohol (3.8 per cent by volume), sugar and water. Misbranded because alcohol content was declared on label to be 15 per cent, which it was not, though no declaration was made on the package. Misbranded, also, because of fraudulent therapeutic claims as an alleged cure for asthma, hay fever, bronchitis, etc.—[*N. J. 22617; February, 1935.*]

Devine's Australian Eucalyptus Inhaler Set.—P. E. Devine, Jeffersonville, Ind. Consisted of a glass inhaler, a bottle of liquid labeled "Eucalyptus Inhaler Re-Charge," and an ointment labeled "Naxaline." The liquid was chiefly eucalyptus oil; Naxaline was essentially volatile oils including eucalyptus oil (6.5 per cent), in petrolatum. For catarrh, asthma, neuritis, hay fever, etc. Fraudulent therapeutic claims.—[*N. J. 22644; February, 1935.*]

Kamforina Salve.—Sweet Mfg. Co., Inc., Pittsburgh. Composition: Essentially camphor and oleoresin of red pepper in petrolatum. For muscular rheumatism, lumbago, bronchitis, etc. Fraudulent therapeutic claims.—[*N. J. 22618; February, 1935.*]

Miller's Rosy.—John Miller, Mobile, Ala. Composition: Essentially salicylic acid, olive oil, a volatile oil such as juniper, alcohol (39.8 per cent by volume), and water. Misbranded as to alcohol content and as to fraudulent therapeutic claims as an alleged remedy for eczema, ulcers, pimples.—[*N. J. 22624; February, 1935.*]

Erdeky's Reparator.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially petroleum oil such as kerosene, with chloroform (53.1 minims per fluid ounce) and volatile oils including camphor, mustard and wintergreen. For rheumatic and neuralgic pains, nervous headache, cramps, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Lung Tea.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentialy plant material including horehound, marshmallow root, Iceland moss, licorice, elder flowers and linden flowers. For influenza, bronchitis, croup, coughs, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Lung Balsam.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially tannin and wild cherry, a phenolic body, alcohol (2.7 per cent by volume), chloroform, sugar and water. For pneumonia, whooping cough, lung fever, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Mustard Ointment.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially petrolatum, with volatile oils including mustard and lemon. For tonsillitis, rheumatism, bronchitis, lumbago, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Blood Tonic.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially plant drug extracts including a laxative drug, and potassium iodide, glycerin, alcohol (6.3 per cent by volume) and water. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Blood Tea.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially senna leaves, juniper berries, gentian root, calamus root and fennel seed. For blood, liver, kidney and stomach disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Blood Purifier.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially plant drug extracts including a laxative drug, and potassium iodide, glycerin, alcohol (6.1 per cent by volume) and water. For venereal diseases, enlarged glands, eczema, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Nerve Medicine.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially compounds of calcium, sodium, potassium, ammonium, iron, manganese, strychnine, quinine, bromides, hypophosphites, sugar and water. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Stomach Regulator.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially pepsin, hydrochloric acid, compounds of strychnine and brucine, extracts of plant drugs including a laxative, and sugars, alcohol (19.7 per cent by volume) and water, with flavoring. For dyspepsia, dizziness, colic, liver troubles, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Mother Drops.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially alcohol (64.6 per cent by volume), plant material including aloe and resins, and water. Misbranded because it contained more than the 50 per cent of alcohol declared on label.—[*N. J. 22628; February, 1935.*]

Erdeky's Cough Balsam.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially tannin and wild cherry, a phenolic body, chloroform, alcohol (2.6 per cent by volume), sugar, water and flavoring, including sassafras oil. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Women's Friend.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Ferrous carbonate, Glauber's salt and arsenic trioxide (1/60 grain per tablet), coated with sugar and iron oxide. For female disorders. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Herb Tea.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Senna leaves, juniper berries, cinchona bark, fennel seed, gentian root and calamus root. For impure blood, liver, kidney and stomach disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Erdeky's Cough Tea.—Kalerd Laboratories Co., Inc., Pittsburgh. Composition: Essentially horehound, althea root, Iceland moss, licorice root, elder flowers and linden flowers. For tuberculosis, pneumonia, peritonitis, whooping cough, etc. Fraudulent therapeutic claims.—[*N. J. 22628; February, 1935.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

SPONTANEOUS THROMBOSIS OF UPPER EXTREMITIES

To the Editor:—Miss E. B., aged 28, 5 feet 3 inches (160 cm.) in height, weighing 156 pounds (71 Kg.), a trained nurse and hospital floor superintendent, on March 27, late in the afternoon while driving her car suddenly had pain in her right arm, in the region of the elbow joint. A member of the staff found a small nodule on the under side of the upper part of the forearm. The lower part was cold, bluish and swollen. She gave no history of having injured her arm. She was put to bed, the arm was elevated and immobilized, a hot moist dressing was applied continuously for four days, and acetylsalicylic acid was given for pain and bromides for nervousness, as she was quite apprehensive of her condition. In twenty-four hours one of the veins of the lower arm could be palpated for six inches, extending for 2 inches above the elbow joint. The urine was normal. The blood chemistry was normal, though no blood platelet count was made. The clotting time was three-fourths minute. The pulse, temperature and respiration were normal throughout her illness. April 6, she was allowed out of bed and a plaster molded splint was applied with the arm in an angular position. April 9 she reported for duty, the arm in splint and sling. It was still swollen and discolored when swung by the side. The patient had always been healthy. The ancestors on both sides were inclined to be stout. She had the usual diseases of childhood. Her weight five years ago was 185 pounds (84 Kg.). Four years ago she had her tonsils removed; the clotting time was three-fourths minute. During the summer of 1934 she took for ten days dinitrophenol sodium on the advice of a physician and lost 18 pounds (8 Kg.). She had a severe anaphylactic reaction from the drug. The systolic blood pressure four years ago was 125; March 27, 1935, 115; June 6, 1935, 90. She is quite nervous and apprehensive that she will have another thrombus at some other part of her body or in the same arm, which is still enlarged. June 12, blood examination revealed: red blood cells, 4,170,000; white blood cells, 6,400; hemoglobin, 81 per cent; color index, 9 plus; polymorphonuclears, 58 per cent; small morphonuclears, 34 per cent; large morphonuclears, 3 per cent; eosinophils, 3 per cent; basophils, 2 per cent; blood clotting time, thirty seconds; blood platelet count, 780,000. Malaria, negative; basal metabolic rate —14; a blood calcium determination was not made for fear of causing another thrombus on collecting the blood. What caused this embolus and thrombosis? Would this condition be caused by an endocrine disturbance? How about a parathyroid hypersecretion as a cause and what could be done about it? What will lower the high platelet count. Please omit name.

M.D., Florida.

ANSWER.—Spontaneous thrombosis of the upper extremities is a definite disease entity. It is usually precipitated by some mild, not unusual muscular effort and is often referred to in the literature as effort thrombosis. It affects young persons usually in excellent health and physical fitness. It is characterized by a sudden excruciating pain in the arm or axilla, with irradiation to the elbow or wrist, and is followed shortly by a hard, painless, cyanotic edema and considerable impairment of function. This edema may slowly subside but may remain stationary. Following muscular exercise there develops a feeling of lassitude and weakness, which is not identical with the intermittent claudication of arterial obstruction. There are also associated vasomotor phenomena, such as flushing of the arm after exercise, vessel spasms, and sensitivity to environmental temperature.

The etiology of these effort thromboses is variable and cannot always be definitely established. A preexisting low grade latent phlebitis has been proved by culture of the clot and microscopic study of the vein in some cases. There are numerous other cases in which an infectious phlebitis cannot be demonstrated. Mechanical causes, such as compression of the axillary vein by the costocoracoid ligament, compression of the superior vena cava by mediastinal lymph glands or by an aortic aneurysm, must be considered. There is finally a group in which a sudden venous spasm may be suspected which, if it lasts long enough, may lead to thromboses. In nervous persons with unstable vasomotor systems, with evidence of accompanying arterial spasm, such a spasm may be a contributing factor.

In case the edema and the functional disability do not disappear, an excision or stripping of the affected venous segment has been suggested and carried out with success.

The high platelet count ought to be checked. Much depends on the method used for counting platelets. There is no satisfactory evidence as yet that the coagulability of the blood varies with the platelet count. The number of platelets is unaltered in hemophilia, while the coagulation time is greatly prolonged. In certain types of purpura the platelets may almost disappear, while the coagulation time is within normal limits. The bleeding time, however, may show a relation to platelets and this phase might be investigated.

SWALLOWED SAFETY PIN

To the Editor:—Recently at a staff meeting at the local hospital there was a discussion as to the best procedure in treating a child or baby that has swallowed an open safety pin. Is it best to operate immediately to remove an open safety pin from the stomach of a 7 months old baby and close the pin without opening the stomach or to await developments? I know that authorities differ; however, what is considered the safest? Give the percentage of death with operation, also the frequency of catching up the mucous membrane of the stomach in closing the pin through the wall of the stomach after opening to and through the peritoneum.

E. M. FAHNESTOCK, M.D., Gulfport, Miss.

ANSWER.—Data obtained at a clinic where this subject has been studied for forty years shows that about 95 per cent of open safety pins that have naturally reached the stomach will pass safely through the intestinal canal; about 5 per cent will cause potentially fatal complications. It all depends on the size of the pin in relation to the size of the patient's viscera. A relatively short pin will turn over and over and is likely to become hooked in doing so; a relatively long pin will jam in the short and somewhat fixed turns of the duodenum, an unfavorable place for abdominal operation. A medium sized pin will pass along, the spring end leading, the point trailing harmlessly (THE JOURNAL, January 26, p. 272). If these relative sizes are not easily determined in a given case, the safest rule is to remove the pin through the mouth by gastroscopic endogastric version or straightening (Jackson, Chevalier: Bronchoscopic Removal of Safety Pins, *Arch. Otolaryng.* **3**: 423 [May] 1926). Since the operative risk in abdominal section on a 7 months old infant is more than 5 per cent, it would seem safer to wait than to operate externally; but as there is no mortality associated with skilfully done peroral gastroscopy, this method would seem preferable to either of the alternatives mentioned. The dangers of waiting are intestinal, not gastric. The management while waiting is given in an article on peroral gastroscopy by Chevalier and Chevalier L. Jackson (THE JOURNAL, January 26, p. 269).

Catching up of a fold of gastric wall in closing a pin by palpation through the unopened stomach has occurred in babies in whom the shortness of the abdominal incision limits the number of manipulative fingers that can be introduced into the abdomen. Pinching together a small fold of gastric wall pulled out through the necessarily small incision, and closing the pin inside the small, pinched fold, probably involve considerable risk of anchorage of the pin in one of the rugae. The accident, therefore, would be likely to happen in a 7 months old infant; but in an adult, in whom the closing could be done within the abdomen or in a large bag of stomach brought out of the relatively long incision, the possibility is remote. In any case it should be determined that the pin really is in the stomach and not anterior to it in the colon, or posteriorly transfixed in the turns of the duodenum, or, as has happened, in the costophrenic sulcus of the right lung back of the stomach.

PEMPHIGUS

To the Editor:—I have had a white man, aged 83, under my care for the past four years who is afflicted with pemphigus. During this time he has received heavy doses of arsenic, iron and cod liver oil, in addition to local ointments. Three years ago the eruption was over his entire body but it cleared up in a few weeks except on both ankles, where it has remained localized since then. It has now started to ascend again and spread over his body. Could you suggest any further treatment for him? Would x-rays be beneficial to these areas? Is there any new treatment that might be of value? Please omit name.

M.D., Ohio.

ANSWER.—Salt retention is a feature of pemphigus; therefore a salt-free diet seems logical and has been successful in some cases. Colon irrigation has been used with good results in connection with the administration of arsenic compounds. Tryparsamide may be tried. It has been successful in a number of cases. The eyes, particularly the visual fields, must be examined before the administration of tryparsamide and every week for the first three weeks and then once a month. The successful cases have responded to moderate dosage.

Quinine is a time honored remedy for pemphigus and has apparently not yet been tried in the case under discussion. After a cautious beginning to discover whether the patient is sensitized to it, the dosage should be pushed to the physiologic limit. Quinine hydrochloride may be given intravenously in 0.5 per cent strength in physiologic solution of sodium chloride every second day up to 1 Gm. per dose.

The patient's own venous blood or blood serum may be injected intramuscularly in amounts from 5 to 20 cc., at intervals of five days. At least five treatments should be given before one decides that the treatment is of no value. A mild febrile reaction may occur after the first dose and should cause no alarm. If this fails, blood transfusion may be found helpful.

The Davis treatment, a thromboplastic substance intramuscularly every other day and iron cacodylate solution intravenously on the alernate days, was effective in a good percentage of cases. Nowadays good authorities report as much benefit from the use of the iron cacodylate alone, given every day. Cannon reports better results from alkalization than from any other treatment.

Locally, x-rays produce temporary benefit. One-fourth skin unit once a week may be given until the dose on any particular area totals two whole skin units. It should not be carried further. General ultraviolet irradiations are recommended for tonic effect. Acriflavine base 1:1,000 in physiologic solution of sodium chloride may be painted on the skin. The bullae may be opened and emptied and a bland dressing such as olive oil and lime water in equal parts may be applied, or 10 per cent boric acid in ointment of rose water. Some patients do well on the powder bath, after a few days of discomfort. Talcum powder is used in the bed in large amounts, no baths being given. In other cases a continuous bath or interrupted bath may give greater comfort.

Improvement must not be too quickly ascribed to treatment. Spontaneous exacerbations and remissions are characteristic of the disease.

ACNEFORM ERUPTION AT MENSTRUAL PERIOD

To the Editor:—May I enlist your aid in a case that has been of a baffling nature to me for the past year and a half. A white American housewife, aged 29, has had an eruption on the face and neck for the past eight years. The lesions vary in size up to a five cent piece (21 mm. in diameter) and appear to be abscesses with the characteristic swelling and redness. Frequently a white stringy material exudes and, when large, they are painful. The onset and regression is cyclic. They make their appearance at ovulation time. That is, about the eleventh or twelfth day in the patient's twenty-six day cycle. The menses are scant, of two days' duration, and unaccompanied by any symptoms. After about one week they begin to subside, and at the menstrual onset the face and neck are quite clear and remain in fairly good condition until the next ovulation time, when the condition recurs. This phenomenon has recurred constantly for the past eight years, with the exception of the first three months of pregnancy three years ago and for a short time post partum. Smears have been repeatedly negative. The Wassermann reaction is negative and the blood counts and hemoglobin are normal. The pulse is normal, the blood pressure a little low and the temperature normal. The urine is normal. The basal metabolic rate is plus 3 and plus 8. Forty cc. of premenstrual blood showed a subthreshold amount of estrogenic substance by the Frank and Goldberger technic. Skin tests to infection have shown no hypersensitiveness to twelve of the more common varieties. The patient is in good health, except for an occasional spell of constipation. Local treatment and ultraviolet rays have been of no avail. Glandular medication, including anterior pituitary and whole pituitary tablets, antuitrin-S, theelin, theelol, progynon, agomensin and sistomensin, and various corpus luteum preparations, have all been used at various times. They have, of course, been properly timed and spaced in the menstrual cycle. As much as 10,000 Allen-Doisy rat units of estrin in a single menstrual cycle has made no change either in the condition of the skin or in the scanty menses. The ovaries are anatomically intact. This is the gist of the case, and any information relative to the etiology or treatment would be most highly appreciated.

R. P. ALDERMAN, M.D., Syracuse, N. Y.

ANSWER.—The lesions described in this case most likely belong in the group of acneform eruptions; hence in seeking possible etiologic factors it is important to rule out such drugs as bromides and iodides, the latter taken in the form either of medication or of food. M. B. Sulzberger, Adolph Rostenberg and J. J. Sher (*New York State J. Med.* **34**:899 [Nov. 1] 1934) have shown that, in patients with acne, even relatively small amounts of ingested iodides regularly produce new lesions or exacerbations of the acne.

Because of the relationship of these abscesses to the menstrual flow, it is logical to assume that there is a hormone factor involved in the process just as there is in outspoken cases of acne. In most normal women there is an increased amount of estrogenic substance in the blood and elsewhere just before the monthly flow of blood sets in. However, Theodore Rosenthal and Raphael Kurzrok (*Proc. Soc. Exper. Biol. & Med.* **30**:1150 [May] 1935) have shown that the amount of estrogenic substance excreted in the urine was subnormal in women suffering from acne. This may explain why some women who have acne are considerably relieved by the administration of estrogenic substance. In the case described the lesions are absent just before and during the menstrual flow. On the other hand, in many women with typical acne there is an exacerbation just before the flow of blood begins. This patient was free from the distressing abcesses during the first three months of pregnancy and for a short time post partum. Normally there is an increase in the amount of estrogenic substance after the eighth week of pregnancy. Following labor there is a sudden decrease in the amount of estrogenic hormone in the circulating blood and in the urine.

Since endocrine therapy has not helped this patient, it may be advisable to have an autogenous vaccine made. If the organ-

ism involved is the staphylococcus, staphylococcus toxoid may be tried. If the administration of vaccine or of toxoid does not help, roentgen therapy may be applied locally. However, this treatment should be carried out cautiously and only by one experienced in the use of roentgen therapy. This form of treatment reduces the activity of hyperstimulated gland and follicle orifices. Preparations containing vitamin D may be of value.

Careful search should be made for foci of infection. The intestinal tract should also be investigated roentgenologically and by examination of the stools for Endamoeba histolytica.

STERILITY

To the Editor:—A married woman, aged 42, desires a child. She has been married ten years and her husband is well. The patient had three miscarriages (two at two months, one at four and one-half months), from unknown causes. She never used contraceptives. Her periods have been characterized by being irregular (every two to three weeks), the passing of clots, profuse flow, dysmenorrhea and exhaustion. She had a curettement in July 1930 and there have been no pregnancies since. Physical examination is negative except for a profuse vaginal discharge in July 1934 diagnosed as showing Trichomonas vaginalis; this was satisfactorily cleared up by douches (tincture of green soap, potassium permanganate) and tampons (glycerin-sulphonated bitumen compound). The Kahn test is negative. The patient is 30 pounds (13.6 Kg.) overweight. She had lost 12 pounds (5.4 Kg.) after strenuous dieting. The following has been my treatment: 1. In October 1934 four treatments of 1 cc. each of (H) anitome. 2. In November anterior pituitary extract (Lilly) one capsule (2½ grains, or 0.16 Gm.) three times a day for ten days. 3. In December and during each month since, 5 cc. of amniotin (Squibb) for oral use in 5 cc. vials. She has used five of these 5 cc. vials. Her present condition is characterized by (1) no dysmenorrhea, (2) only an occasional blood clot, (3) no profuse flow, (4) regularity of periods (twenty-eight days) and (5) a general feeling of well being. What treatment would you suggest to overcome her sterility? Examination of the husband has given negative results. The patient is most desirous of having a child. Please omit name.

M.D., Michigan.

ANSWER.—The patient is approaching the age of the menopause, and, if she is anxious to become pregnant, little time should be lost. The menstrual history suggests fibromyomas in the uterus; however, since the periods improved by the administration of a variety of hormone substances, there may be none found.

A complete "infertility-sterility" investigation made by some one specially qualified and equipped to carry it through for both partners is indicated. The use of polyglandular therapy is purely empirical and may produce results opposite to those sought. Hühner's and Rubin's tests should be informative, and pneumoroentgenography may reveal the underlying pathologic condition that is interfering with conception. The entire matter was described by Stein and Leventhal in THE JOURNAL, Feb. 20, 1932, page 621.

LEUKORRHEA

To the Editor:—Kindly list for me the causative conditions for leukorrhea in young girls when repeated examinations of smears prove to be negative for organisms and physical examination is essentially negative. A white girl, aged 18 years, has had a thin white scanty discharge for 8 months. It becomes worse after the menses and at times is copious, so that she notices it trickling down her leg. The menses began at 14 years and were regular every thirty days up to a year ago, at which time they became prolonged to eight or nine days and were accompanied by severe dysmenorrhea. Previously they lasted five or six days. The uterus is slightly anteflexed, the hymen is intact and the adnexa are normal. The sigmoid colon is dilated and tender. The patient has constipation, has frequency dysuria, and urinates once during the night. Under treatment the constipation and genito-urinary symptoms are lessened but the vaginal discharge persists. Kindly suggest a line of treatment for the leukorrhea. Please omit name.

M.D., Pennsylvania.

ANSWER.—Leukorrhea in young girls arises usually from hypersecretion ascribable to emotional stimulation. The increased physiologic secretion macerates the cervical mucosa, a glandular hyperplasia ensues, erosions form, and the leukorrhea persists.

Occasionally there is a pathologic condition, despite negative evidence on palpation and the absence of a history of infection or instrumentation. The prolonged menstruation accompanied by dysmenorrhea suggests obstructed uterine drainage, or disturbed ovarian function.

Preliminary to treatment, an examination should be made to rule out vaginal folds and pockets, and the cervical canal should be dilated to insure adequate drainage. The basal metabolic rate should be determined, and thyroid administered, unless contraindicated, in an effort to decrease the excessive menstruation. Hygienic measures are important and improved general health may suffice alone to effect a cure. Destruction of hyperplastic cervical glands is readily accomplished by radial incisions with a nasal cautery tip.

FLUID FOR WASHING NOSE AND SINUSES

To the Editor:—I have been using a sinus drainage suction apparatus for cleaning out the sinuses by mild suction and washing the mucous membranes of the nose. It gives gratifying results especially in acute sinusitis, coryza and "chronic catarrh." I use a quart rubber bag elevated to the height of the patient's head, a tube to one nostril and another tube from the other nostril to the floor, a five foot drop. I use a half teaspoonful each of sodium bicarbonate and sodium chloride to the quart of lukewarm water. Will you give me a prescription that is better? I should like one with zinc sulphate, sodium bicarbonate, sodium perborate and chloride and a little flavoring. I should like to mix up a large batch, a pound or so, and use a teaspoonful or so to 1,000 cc. of water. Will you figure out a correct proportion of each for me so that the osmotic pressure is right and the various ingredients listed are in correct proportion? If you have a better formula, please advise me.

EDWARD MARTIN REPP, M.D., Philadelphia.

ANSWER.—The sodium bicarbonate and sodium chloride in the proportion one teaspoonful to one pint of water gives about the same concentration as that of the blood. Fluids used in the nose should be at or a little above body temperature, and no excessive pressure should be employed. The mixture of sodium chloride and sodium bicarbonate just mentioned is as efficient as any for cleansing purposes. One may employ a powder consisting of equal parts of sodium chloride, sodium borate and sodium bicarbonate, and of this mixture use a teaspoonful and a half in a quart of water. At the same time, if any flavoring is desired, about 1½ drachms of oil of cassia may be added to the mixture.

SENSITIVITY TO BUTESIN AND PICRATES

To the Editor:—A short while ago a patient came to see me with a mild burn of the right forearm. I applied butesin picrate ointment to the burn area and it healed in a few days. About one week after the ointment was applied, a papular eruption appeared over the area to which the ointment had been applied. Itching was not very bad. A few days later the eruption appeared on the face and the left forearm, but here instead of a discrete pale papular eruption it was very red, maculopapular and blotchy. All areas itched. In the next few days the later eruption became generalized. Temperature, pulse and respiration have been continually normal. For ten days now there has been no change. Can you give me some information as to the treatment, symptoms, cause and prognosis of these toxic reactions due to butesin picrate ointment? Please omit name.

M.D., Pennsylvania.

ANSWER.—The occurrence of toxic cutaneous reactions following the application of butesin picrate ointment to burns has been reported on a number of occasions. The treatment consists in the complete removal of the irritant, local soothing and emollient applications and the use of sodium thiosulphate intravenously, in the event of no response to local therapy. In most of the reported cases, recovery has occurred. The genesis of this type of dermatitis is discussed by Sulzberger and Wise (*Arch. Dermat. & Syph.* **28**:461 [Oct.] 1933). In a report of their observations in four cases, two of the three patients that they were able to test were sensitive to both butesin and trinitrophenol (picric acid), while the third patient was sensitive to butesin alone. They state that this suggests that the application to a burned (injured) area may constitute a situation peculiarly favoring sensitization.

REDUCING SUBSTANCE IN URINE

To the Editor:—A few years ago I found on examining my urine that the Benedict solution turned green about two hours after a meal. This occurs occasionally. I am 35 years of age, 5 feet 8 inches (173 cm.) in height, and weight 145 pounds (66 Kg.). There is no family history of diabetes mellitus. I have no symptoms of any kind and feel well except for a slight tendency toward diarrhea, probably a condition of irritable colon. I have increased 10 pounds (4.5 Kg.) in weight in the last ten years. My fasting blood sugar is 0.1 per cent and the dextrose tolerance curve is normal, with the urine sugar free. Is this an incipient diabetes mellitus or alimentary glycosuria or renal diabetes? Should I restrict my diet in any way? Am I prone to acquire diabetes? Please let me know your opinion, as the men here differ on this. Please omit name.

M.D., Minnesota.

ANSWER.—From the description, no diagnosis of any of the conditions mentioned can be made. The probability is that the reducing substance that occasionally appears in the urine is not dextrose. It may be levulose, pentose or lactose. When reduction occurs in the urine the presence of these substances may be determined by comparatively simple tests given in most textbooks. Occasionally an increased excretion of glycuronates in the urine may cause some reduction of Benedict's solution. The glycuronates are increased in the urine after such substances as acetylsalicylic acid, antipyrine, camphor, chloral hydrate, menthol, and amidopyrine are taken.

The presence of a non-dextrose reducing substance in the urine is not an indication of a susceptibility to diabetes. As to dietary restriction, the ideal weight calculated from the

correspondent's age and height lies somewhere between 150 and 160 pounds (about 70 Kg.). It would be wise for the inquirer like every normal person, not to exceed this weight, since overweight is known to be the greatest single predisposing factor in the etiology of diabetes.

SEDIMENTATION RATE IN BLOOD

To the Editor:—Kindly let me know what is considered the normal sedimentation rate of the blood by the Westergren method. I believe the reference is *International Clinics* **1**:70 (March) 1928.

M. F. LAUTMAN, M.D., Hot Springs, Ark.

ANSWER.—Westergren, in the *American Review of Tuberculosis* (**14**:94 [July] 1926) described a satisfactory method for determining the red blood cell sedimentation rate.

A sedimentation of not over 3 mm. in the first fifteen minutes, and not over 8 mm. in the thirty minute period, is the strict normal. Anything over 10 mm. in the thirty minute period, or over 15 mm. in the forty-five minute period, may be regarded as definitely pathologic. The rates tend to be slightly higher in women (by 3 to 4 mm. in forty-five minutes) than in men, and to be higher during menstruation.

A sedimentation rate of from 15 to 30 mm. in forty-five minutes is a slight increase, from 30 to 50 mm. a moderate increase, and from 50 to 100 mm. a severe increase.

This test is not a specific test for any disease. The rate is accelerated in active tuberculosis, acute inflammation, infectious diseases, carcinoma, pregnancy and the toxemias. It is of chief value in distinguishing between inflammatory and noninflammatory processes, and for estimating the activity or progress of pulmonary tuberculosis.

REMOVAL OF TONSILS AT 70

To the Editor:—A man, aged 70, has asked me to remove his tonsils. Backache appeared to be his only reason for this request; he has heard of another man, much younger however, who obtained relief from joint pains following a tonsillectomy. Physical examination, in addition to a moderate hypertrophy of the tonsil on the right side, revealed a blood pressure of 210 systolic, 100 diastolic, and urinalysis showed four plus albumin. Under these conditions I advised electrocauterization. Your comment and advice would be appreciated. Kindly omit name.

M.D., Illinois.

ANSWER.—It is difficult to say in any particular case whether joint pains are present as a result of tonsillar infection. The history of attacks of tonsillitis, the finding of actual pus in the tonsils, and the elimination of other foci in the body are necessary before one can definitely state that tonsillectomy is likely to give relief of the joint pains. With a marked hypertension and other signs and symptoms, it would probably be better to avoid surgery at the age of 70. Carefully performed electrical coagulation may in such cases be advisable if there are definite indications for the elimination of the tonsils. It is necessary, however, as a rule to use electrical coagulation at quite a number of sittings, and there is also the possibility of secondary hemorrhage a number of days after each coagulation.

SYPHILIS IN MICE

To the Editor:—Mice, rats and guinea-pigs are, I understand, experimentally susceptible to syphilis, and although no local lesion appears at the site of infection, the brain is often seriously involved. Will you please tell me whether syphilis in such animals produces any lesions in the eyes, and, if so, what ones and whether severe? Please do not print name.

M.D., Minnesota.

ANSWER.—The majority of reports on the successful inoculation of white mice with Spirochaeta pallida emphasize the absence of specific lesions, although organisms may be recovered from such animals for long periods by the injection of various tissues into rabbits. A summary of the subject together with numerous references appears in a recent monograph by Gastronel and Pulveris, La syphilis expérimentale, Paris, 1934.

MICROCEPHALY

To the Editor:—A girl, aged 4 years, has microcephaly. Would you be kind enough to outline the latest treatment and management of this condition, paying especial attention to glandular therapy? Does anterior pituitary extract help? Please omit name.

M.D., Massachusetts.

ANSWER.—A case of true microcephaly in a 4 year old child implies an arrested development of the brain. In such a condition no glandular therapy is of any avail, and anterior pituitary extract would be useless in the treatment.

The best treatment for such a child would be a special school, where, according to the state of the child's mentality, she could be trained and taught up to her learning capacity.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Kansas City, Mo., May. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Dec. 7. *Applications must be filed not later than Nov. 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: St. Louis, Nov. 18. Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: St. Louis, Nov. 20. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 30. Sec., Dr. Walter Freeman, 1726 Eye St., N. W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARKANSAS: *Basic Science.* Little Rock, Nov. 4. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular).* Little Rock, Nov. 12. Sec., State Medical Board of the Arkansas Medical Society, Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, Nov. 12. Sec., Dr. Clarence H. Young, 207½ Main Street, Little Rock.

CALIFORNIA: Sacramento, Oct. 21-24. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Medical (Regular).* Hartford, Nov. 12-13. *Endorsement.* Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, Nov. 12. Sec., Dr. Joseph H. Evans, 1488 Chapel Street, New Haven.

FLORIDA: Tampa, Nov. 11-12. Sec., Dr. William M. Rowlett, Box 786, Tampa.

ILLINOIS: Chicago, Oct. 22-24. Supt. of Regis., Dept. of Regis. and Edu., Mr. Homer J. Byrd, Springfield.

KENTUCKY: Louisville, Dec. 3. Sec., Department of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413 State House, Boston.

MISSOURI: Kansas City, Oct. 24-26. State Health Commissioner, Dr. E. T. McGaugh, Capitol Building, Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III, Baltimore, Oct. 22-24, and Boston, Nov. 5-7. Exec. Sec., Mr. Edward S. Elwood, 225 So. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 19-20. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 4. Sec., Dr. Edward E. Hamer, Carson City.

OHIO: Columbus, Dec. 3-5. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: *Basic Science.* Portland, Nov. 16. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 12. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Houston, Nov. 18-20. Sec., Dr. T. J. Crowe, 918 Mercantile Building, Dallas.

WEST VIRGINIA: Huntington, Oct. 28. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

Colorado July Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, July 2, 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Fifty-three candidates were examined, 52 of whom passed and 1 failed. Seven physicians were licensed by endorsement. The following schools were represented:

PASSED

School	Year Grad.	Per Cent
University of Colorado School of Medicine	(1933)	86.1, (1935) 82.2, 83, 83.2, 83.4, 84, 84, 84.4, 85, 85, 85.3, 85.3, 85.3, 86, 86, 86, 86, 86.1, 86.1, 86.2, 86.3, 87, 88, 88, 88, 88, 88.2, 88.3, 88.4, 89, 89, 89.2, 89.4, 90, 90.1, 90.2
Northwestern University Medical School	(1935)	87.3
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934)	89
University of Michigan Medical School	(1934)	89.1
Washington University School of Medicine	(1934)	86.2
Université de Strasbourg Faculté de Médecine	(1918)	87*
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main	(1933)	86.5,* 87.5*
Osteopaths †		77, 77.5, 78.4, 81.3, 81.5, 83, 83.5, 85, 87.3

FAILED

School	Year Grad.	Endorsement of
Osteopath ‡		

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
University of Arkansas School of Medicine	(1933)	Arkansas
Chicago College of Medicine and Surgery	(1916)	Illinois
University of Kansas School of Medicine	(1934)	Kansas
University Medical College of Kansas City, Mo.	(1908)	Kansas
University of Nebraska College of Medicine	(1932)	Kansas
Jefferson Medical College of Philadelphia	(1906)	Iowa, (1920) New York

* Verification of graduation in process.
† Licensed to practice medicine and surgery.
‡ Examined in medicine and surgery.

Ohio June Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports the oral, written and practical examination held at Columbus, June 4-7, 1935. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Two hundred and fifty-two candidates were examined, 249 of whom passed and 3 failed. Forty-eight physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine	(1935)	79.4,	81.7
Northwestern University Medical School	(1934)		85.3
Rush Medical College	(1935)	80.7,	81.5
School of Medicine of the Division of the Biological Sciences	(1933)		79.3
University of Louisville School of Medicine	(1935)		84.9
Johns Hopkins University School of Medicine	(1932)		78.8
University of Maryland School of Medicine and College of Physicians and Surgeons	(1935)		83.4
Harvard University Medical School	(1934)		85.7
University of Minnesota Medical School	(1935)		81
St. Louis University School of Medicine	(1934)	77.7,	80.6
Washington University School of Medicine	(1934)		86
Creighton University School of Medicine	(1934)		78.7
Cornell University Medical College	(1934)		83
University of Buffalo School of Medicine	(1934)		75.9
Eclectic Medical College, Cincinnati	(1935)		78.2, 78.7, 79, 79.6, 79.7, 80.2, 80.6, 81.4, 82.5, 83, 83, 83.2, 84.6, 84.7, 85.7, 87
Ohio State University College of Medicine	(1935)		75.1, 75.9, 76.1, 76.4, 76.7, 76.8, 77, 77.2, 77.4, 77.5, 78.3, 78.3, 78.4, 78.4, 78.5, 79.1, 79.1, 79.4, 79.7, 79.8, 79.9, 80, 80.1, 80.2, 80.3, 80.5, 80.5, 80.6, 80.6, 80.6, 80.7, 80.8, 80.9, 81, 81.1, 81.1, 81.1, 81.1, 81.3, 81.4, 81.5, 81.6, 81.6, 81.6, 81.9, 82, 82, 82.1, 82.2, 82.3, 82.4, 82.4, 82.4, 82.5, 82.5, 82.6, 82.8, 82.8, 83.1, 83.1, 83.2, 83.2, 83.3, 83.5, 83.5, 83.5, 83.6, 83.7, 83.7, 83.8, 83.8, 83.9, 84, 84.3, 84.5, 84.7, 84.9, 84.9, 85.8, 86.2, 86.4,* 86.9, 88.6, 89.1
University of Cincinnati College of Medicine	(1935)†		75.5, 76.2, 76.6, 77, 77.2, 77.6, 78.1, 78.7, 78.9, 79, 79.2, 79.2, 79.8, 80.1, 80.2, 80.3, 80.6, 80.6, 80.8, 80.8, 80.8, 80.9, 81, 81.2, 81.4, 81.4, 81.5, 81.5, 81.6, 81.8, 81.8, 81.9, 81.9, 82, 82.1, 82.1, 82.2, 82.3, 82.4, 82.4, 82.6, 82.7, 82.7, 82.8, 82.9, 83, 83.2, 83.2, 83.5, 83.9, 84, 84.1, 84.2, 84.2, 84.3, 84.7, 84.7, 85.2, 85.3, 85.6, 86, 86.9
Western Reserve University School of Medicine	(1935)		75, 75, 75.9, 77.2, 77.4, 77.4, 77.9, 77.9, 78, 78, 78.1, 78.1, 78.1, 78.6, 79, 79.1, 79.2, 79.2, 79.2, 79.3, 79.4, 79.5, 79.6, 79.7, 79.8, 79.9, 79.9, 79.9, 79.9, 80.2, 80.2, 80.4, 80.6, 80.7, 80.7, 80.8, 81.1, 81.2, 81.3, 81.3, 81.6, 81.8, 82, 82, 82.1, 82.2, 82.3, 82.3, 82.3, 82.4, 82.4, 82.5, 82.8, 82.8, 82.9, 83.4, 84.1, 84.3, 84.4, 85.1, 85.2, 85.4, 85.5, 85.6, 86.2
Jefferson Medical College of Philadelphia	(1934)		76.9*
Woman's Medical College of Pennsylvania	(1934)		79
Marquette University School of Medicine	(1934)		79.3
University of Western Ontario Medical School	(1934)		77.9
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1933)		80.1†

School	FAILED	Year Grad.	Per Cent
University of Cincinnati College of Medicine	(1935)		72.7†
Western Reserve University School of Medicine	(1935)		73.2
Universität Köln Medizinische Fakultät	(1934)		70.5‡

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine	(1927),	(1928)	Illinois
Northwestern Univ. Medical School.	(1932) Colorado,	(1933)	Illinois
Rush Medical College	(1928), (1934) Illinois,	(1934)	Michigan
University of Illinois College of Medicine		(1925)	Illinois
Indiana University School of Medicine		(1934)	Indiana
Keokuk Medical College, Iowa		(1898)	Illinois
State University of Iowa College of Medicine		(1924)	Iowa
University of Kansas School of Medicine		(1930)	Kansas
University of Louisville School of Medicine		(1934, 3)	Kentucky
Tulane University of Louisiana School of Medicine		(1915)	Alabama
Johns Hopkins University School of Medicine		(1934)	Maryland
Harvard University Medical School		(1931)	N. Carolina
University of Michigan Medical School	(1930, 2), (1932), (1933), (1934, 2)		Michigan
St. Louis Univ. School of Med.	(1930), (1933, 2), (1934, 8)		Missouri
Washington University School of Medicine.	(1933),	(1934)	Missouri
New York University, University and Bellevue Hospital Medical College		(1931)	New York
Jefferson Medical College of Philadelphia		(1925)	Penna.
University of Pennsylvania School of Medicine		(1930)	Michigan
Univ. of Pittsburgh School of Med.	(1912), (1932, 2)	(1933)	Penna.
University of Tennessee College of Medicine		(1934)	Tennessee
Vanderbilt University School of Medicine		(1924)	Tennessee
Medical College of Virginia		(1934)	Virginia
University of Wisconsin Medical School		(1931)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
School of Medicine of the Division of the Biological Sciences	(1934),	(1935)	N. B. M. Ex.
Harvard University Medical School		(1930)	N. B. M. Ex.

* License has not been issued.

† These applicants have received an M.B. degree and will receive an M.D. degree on completion of internship.

‡ Verification of graduation in process.

Book Notices

The Principles and Practice of Urology. By Frank Hinman, A.B., M.D., Clinical Professor of Urology at the University of California Medical School. Cloth. Price, $10. Pp. 1111, with 513 illustrations. Philadelphia and London: W. B. Saunders Company, 1935.

In his preface the author of this excellent book states that his objective was the presentation of the principles of urology in a form that would be of practical use to the medical student and the man in general practice. One does not have to read far before discovering that the author has not only accomplished what he set out to do but also has produced a work that will serve as a reference book for the urologist and a helpful aid to the teacher. The rapid changes and advances in this branch of surgery have produced an urgent call for a textbook of this kind. The first part deals with the principles of urology, which the author divides into the biologic principles and the clinical principles. The subdivisions under these two headings are clearly and precisely defined and, although brevity is stressed, nothing seems to have been omitted. This section of the book offers an excellent opportunity for the teacher to assign definite parts of the fundamentals of urology with a feeling that the student will obtain a clear and concise insight into the subject. The second part deals with the practice of urology. Here again the author covers the subject in a most complete manner. The chapter on gonorrhea, so essential in a book of this kind, is fully presented. Ample consideration is given physiology, pathology and diagnosis, and while operative technic and proceedings are fully described, the details of surgical technic must necessarily be limited in a single volume. The bibliography is well handled. The book is replete with excellent illustrations. This volume may be classed as a standard English textbook on urology and can be recommended to the student and the general practitioner and as a reference book for the urologist. The author has well accomplished his purpose and is to be congratulated on having contributed this excellent volume to the advancement of urology.

Koronarinfarkt und Koronarinsuffizienz in vergleichender elektrokardiographischer und morphologischer Untersuchung. Von Professor Dr. med. Franz Büchner, Vorstand des Pathologischen Instituts am Horst-Wessel-Krankenhaus der Stadt Berlin, Professor Dr. med. Arthur Weber, Vorstand des Balneologischen Universitätsinstituts in Bad Nauheim, und Dr. med. Berthold Haager, Assistent am Balneologischen Universitätsinstitut in Bad Nauheim. Paper. Price, 12 marks. Pp. 104, with 131 illustrations. Leipzig: Georg Thieme, 1935.

The authors report forty-three cases of heart disease that they have observed, giving brief details of the clinical history and necropsy. Their especial purpose is to find out how much the electrocardiogram may reveal as to the nature and localization of lesions in the heart. A commendable feature is the manner in which on the one page are briefly set forth the history, the electrocardiographic observations, the record of the necropsy and a discussion of the salient features of the case, while on the page opposite are the electrocardiograms taken at various times, a diagram indicating the condition of the coronary arteries as to sclerosis and thrombosis, and a "photogram" of the heart showing in a remarkably clear manner the location of the lesion and the naked eye appearances of the damaged myocardium. Only heart disease the result of anatomically proved coronary obstruction or of "coronary insufficiency" is considered. Cases of acute and chronic obstruction due to thrombosis, of aortic regurgitation due to rheumatism or syphilis, as well as cases associated with anemia are among those discussed. In general there is a confirmation of the well known facts of electrocardiography. At times it seems as though the authors are unduly interested in proving their preconceived notions as to the significance of the tracings. Thus without any description whatever they occasionally summarily dismiss a tracing because it is "not characteristic," which sounds as though they were reporting not impartially what they find so much as what they are looking for. Q waves, even very small ones, in leads 1 and 2 are regarded as of great significance, yet comparatively little attention is given to even large ones in lead 3. It is sometimes difficult to follow their reasoning when they declare the existence of coronary insufficiency but no evident obstruction. There is here a perplexing confusion of pathologic anatomy and pathologic physiology. While

in no sense epoch making, the work is commendable in that it adds to the knowledge of a subject that is far from settled and that, because of its complexity and the many variables involved, will probably for long defy accurate clinical analysis.

The Subnormal Mind. By Cyril Burt, M.A., D.Sc., Professor of Psychology, University of London. University of London, Heath Clark Lectures, 1933, delivered at the London School of Hygiene and Tropical Medicine. Cloth. Price, $3.75. Pp. 368. New York & London: Oxford University Press, 1935.

The author of this volume is the leading English exponent of mental testing. He has revised the Binet test for use in England and his previous contributions on the present subject have been well received. Unfortunately the title of the present volume is a misnomer, for not only does the author treat of mental deficiency as the title would imply, but he treats also of the "abnormal" mind. In spite of this, the book is excellent. It is a revision of lectures presented at the London School of Hygiene and Tropical Medicine, and the purpose of delivering them was to introduce to physicians the elements of clinical psychology as it is practiced today. The book is simply written with an interesting style, logically put together, and it covers a surprising amount of ground when one considers the number and variety of the topics dealt with. There are eight chapters, the first one treating of the concept of normality in regard to psychologic testing. The second and third present the problems of the mental defective and the dull and backward child. The fourth chapter is an excellent, sensible and modern presentation of the subject of delinquency and should be read by every one interested in studying the etiology and treatment of crime. The fifth, sixth and seventh chapters are discussions of the neuroses, particularly those seen in children, and the modern points of view are strictly adhered to throughout these chapters. There is a concluding chapter and three appendixes. The book should be of value to pediatricians and psychiatrists.

Arthritis and Rheumatoid Conditions: Their Nature and Treatment. By Ralph Pemberton, M.S., M.D., F.A.C.P., Professor of Medicine in the Graduate School of Medicine, University of Pennsylvania. Second edition. Cloth. Price, $5.50. Pp. 455, with 70 illustrations. Philadelphia: Lea & Febiger, 1935.

Pemberton is conceded to be a leading authority on rheumatic diseases. He has done excellent experimental and research work on this and related conditions. He is chairman of the American Committee for the Study and Control of Rheumatism and a prime factor in the formation of the American Association for the Study and Control of Rheumatic Diseases. The present work attempts to view the problem of arthritis from a broad physiologic standpoint and to consider the interrelationship of the various factors that constitute it. One can be sure that the data contained represent an accurate statement of the present-day conception of these conditions. The material is presented in excellent sequence; the book presents a dispassionate account of a difficult subject, concerning which much is controversial. It was written largely to show the practitioner what to expect in the way of symptoms, what to do in the way of correction along broad physiologic lines, and what to do in the matter of specific activity toward certain phases of the problem. It is not to be supposed that the thesis developed in this text, that a disturbance of blood supply constitutes part of the pathologic deviation producing the phenomena of arthritis, affords in the mind of the author the whole or even the dominating explanation of the rheumatoid syndrome. The evidence strongly indicates that, whether or not any additional mechanism is concerned, denial to the muscular tissues of their usual degree of contact with the circulating blood interferes with the withdrawal of dextrose, so that when sugar is fed a "lowered tolerance" results. This clearly suggests that circulatory changes contribute to the pathology of arthritis and focal infection with which a lowered sugar tolerance is closely associated. The clinical benefits following therapeutic measures that improve the blood flow emphasize the relation of circulatory changes to arthritis. Evidence is presented to indicate that there is a low grade edema of the tissues in active arthritis. The blood volume of atrophic patients has been found to be increased above normal, whereas in hypertrophic patients low readings are recorded. There is a diminished variability of skin function in arthritic patients, as shown by the comparatively sluggish response of skin temperature to changes in environmental temperature.

One of the first lessons to be learned in treating this disease is the importance of maintaining a broad-minded attitude. There is no simple panacea in the treatment of arthritis, nor can there be, in the nature of things. In view of the wide disturbance of physiologic function and the secondary invalidism dependent on it, it is obviously impossible that any single measure could be adequate to restore this state of affairs to normal. Results will be largely determined by the judgment used in the selection of cases appropriate for treatment. The two great types of arthritis cannot definitely and finally be wholly divided one from the other, least of all from the standpoint of treatment. A proper coordination of diet, as a foundation, with other well considered measures, will achieve a highly gratifying percentage of benefit in properly selected subjects. In some cases of pernicious anemia treated successfully on the large liver diet, hypertrophic arthritis developed. The inability of the medical profession to care adequately for persons with arthritis has been a potent factor in the development of those cults which depend chiefly on manipulation and massage or some modification of these measures.

Pemberton is one of the few internists who know the subject of physical therapy from the theoretical as well as the practical point of view.

Traité de thérapeutique. Par A. Theohari, professeur de clinique thérapeutique à la Faculté de médecine de Bucarest. Tome I: Tube digestif, glandes salivaires, pancréas, foie. Tome II: Appareil respiratoire, reins, nutrition, avitaminoses, glandes endocrines, rheumatismes chroniques. Publié par les soins de Dr. I. Gheorghian Popesco. Paper. Price, 125 francs per set. Pp. 586; 721, with illustrations. Paris: Masson & Cie, 1935.

One appreciates this posthumous work when one reads that it is the fruit of thirty years of scientific activity; and one may well believe this in spite of the fact that it is unfinished, for it represents a meticulous and painstaking garnering of data. The first volume deals with the therapy of the diseases of the digestive tract and the second with diseases of the respiratory system, the kidney, of nutrition, of the endocrines, with avitaminoses, and of chronic rheumatism. The author was known especially for his researches on mineral waters, particularly those of Rumania, the effect of diet in experimental nephritis, and the use of emetine in pulmonary gangrene and chronic bronchitis. The book is written not only in the French language but also in the French style of therapeutic abundance, not to say redundance, the author not only telling what he actually knows of the value of remedies but also displaying his erudition by discussing critically or uncritically the other methods of treatment he knows. It would seem that what this world needs more than anything else is reliable guidance in therapeutics. Judged from this standpoint the present book leaves much to be desired, as do indeed nearly all other books on therapeutics. To the initiated, Theohari's life work is a quarry hiding many a golden nugget; to the medical practitioner, a mine containing ore with much slag; to the medical student, a hopeless mass of rubble. Probably to indicate that it is unfinished, the book has no index.

Gestalt Psychology: A Survey of Facts and Principles. By George W. Hartmann, Ph.D., Professor of Psychology, the Pennsylvania State College. Psychology Series, edited by Albert T. Poffenberger, Ph.D., Professor of Psychology, Columbia University. Cloth. Price, $3.50. Pp. 325, with 44 illustrations. New York: Ronald Press Company, 1935.

American psychologists have been greatly interested in this new field of psychology, developed in Germany, known as the gestalt school. The picture of mental processes as understood by old school psychologists differs markedly from the ideas of gestalt psychology. The understanding of perception has been altered greatly by the views put forth by the gestalters and many previously poorly understood mental activities have been interpreted in a clearer light. The gestalt theory is known as the configurational theory and its implication is that perception is a matter of gross patterns rather than a simple synthesis of sensations. Much new material has been developed in America by genetic psychologists and animal psychologists which tend to substantiate or to cast doubt on the gestalt theories. Previous to the present volume, the only books on the subject were written by simon-pure gestalt psychologists. The present writer, while sympathetic with the school, could not be called a member of it. Hence he presents the material both pro and con that recent research has revealed. His presentation is complete,

simple and well expressed, and it forms an adequate textbook. The first part of the book is historical; the second part is theoretical, pointing out the physical, physiologic and philosophical foundations of the theory; the third part is empirical, treating of such subjects as visual perception, audition, memory, learning, insight and conation. There is a fourth part which points out the relations of this theory to psychiatry, industrial psychology and educational psychology, and the fifth and concluding part is devoted to valid criticisms of the gestalt theories. There is a good chronology and a fair glossary, and the references in the text are well annotated. There are points of view expressed in the present book with which any one interested in psychiatry should be familiar, but the volume has no direct significance to physicians as a whole.

A Bibliography of Two Oxford Physiologists: Richard Lower, 1631-1691; John Mayow, 1643-1679. By John F. Fulton, M.A., Sterling Professor of Physiology in the Yale University School of Medicine. [Reprinted from the Oxford Bibliographical Society Proceedings and Papers, 1935. Volume IV, Part I.] Paper. Pp. 62, with 7 illustrations. London: Oxford University Press, 1935.

Bibliophiles and all who are attentive to the history of science in general and of medicine in particular will welcome this scholarly book, which is a fitting companion to the translation of Lower's De corde, made by Franklin in 1932. It is not, as bibliographies are wont to be, a mere compilation; it is much more. It is a painstaking study with wise comments, a study that evinces erudition and a genuine love of the task. One finds here the same high order of merit shown by Fulton's bibliography of Robert Boyle, published in 1932. The promised bibliographies of Willis, Hooke and others will be awaited with interest.

New Minds for Old: The Art and Science of Mind-Training. By Esmé Wingfield-Stratford, D.Sc., M.A. Cloth. Price, $3. Pp. 452. New York: Macmillan Company, 1935.

The author's record as research student of economics, fellow of King's College, Cambridge, soldier, poet, novelist, and writer on historical and pedagogic subjects shows a versatility that is evident in the present volume. It is an attempt to outline "the master science of mind-training, or self-training, on which all the rest depend." The essence of his motive is expressed in the following: "The very notion that improved machines demand improved men seems to have occurred to no one. We talk of reconstructing society, as if such a task were conceivably practicable without first reconstructing ourselves. . . . You go into training for everything whatever at which you want to excel, with the sole and monstrous exception of the art of life itself —the art of feeling and thinking and willing, and of replying to the challenge of environment." One of the results is shown in certain nations where a team spirit is imposed on "a community of mental slaves . . . joyfully flocking to the service of any tyrant who will take from their minds the burden of thought and from their souls the incubus of conscience."

In four parts entitled "The Foundations," "Mind Building," "Mens Sana" and "Mind in Action" the author presents in leisurely fashion his many ideas and suggestions. The style is excellent and the frequent humor and keen criticism make for easy reading. The psychiatrist, the psychoanalyst and the psychologist will each find points for objection. The intelligent layman will find much stimulating material. The book will be valuable as a guide to parents and teachers. The dull and tired citizen who needs it most will be discouraged by its length. For him it is to be hoped that the author will prepare a simple digest of his material.

La cianosis de los cardiacos negros de Ayerza: Su estudio semiológico, clínico y fisiopatológico. Por Eduardo L. Capdehourat, jefe de Clínica de la Facultad de Medicina. Trabajo de la catedra de clinica medica del Profesor Dr. Mariano R. Castex. Paper. Pp. 373, with 55 illustrations. Buenos Aires: Aniceto Lopez, 1934.

This is an account of the symptomatology, pathologic physiology and diagnosis of Ayerza's disease according to the author's conception of that disorder. The latter consists in a firm belief that chronic bronchopulmonary disease precedes the development of pulmonary arteriosclerosis and is the essential factor in the production of cyanosis. This thesis is defended valiantly if somewhat argumentatively. The colored plates, protocols of the author's cases, and index are excellent. The bibliography is extensive.

Medicolegal

Workmen's Compensation Acts: Silicosis and Tuberculosis Not Compensable in Absence of Existing Disability.—The North End Foundry Company had to reinsure its employees. The prospective insurer demanded as a condition precedent to the execution of a policy that all employees be examined by a physician selected by it. Before the examination was made, all employees were discharged. Only those were reemployed who were believed to be physically fit for the duties to be imposed on them. Five employees who were not reemployed, because they were not physically fit, were awarded compensation by the industrial commission, under the Wisconsin workmen's compensation act. Thereupon their employer and its insurance carrier brought actions against the commission and the several claimants to set aside the awards. From a judgment modifying and affirming the award in each case, the industrial commission, the several claimants, the employer and the employer's insurance carrier all appealed to the Supreme Court of Wisconsin.

The Supreme Court based its decision on the case of one claimant, Pernovich, as the same questions were involved in all cases. Pernovich, before he was discharged, had worked steadily. He was not aware that he was suffering from any disease. The physical examination, however, showed that he had had silicosis for probably five years or more and was in the second stage of that disease and that tuberculosis had already developed. Although at the time of the examination Pernovich was able to perform his work, his chance of recovery would be diminished if he remained in the dusty employment in which he had been engaged. Reexamination three months later showed that his ability to do work requiring physical exertion was greatly diminished, if he could be said to be able to do it at all. Nevertheless Pernovich's employer and its insurance carrier contended that he had suffered no compensable injury in the course of his employment with his employer, the North End Foundry Company.

Disability within the meaning of the statute, said the Supreme Court, occurs when an employee is disabled from rendering further service; that is, when he no longer has physical ability to perform his work in the usual and customary way. Unless he is so disabled he sustains no compensable injury even though in the course of his employment he is subjected to conditions that contribute to disability as an end result. The right of an employee to compensation depends on whether or not, in the course of his employment and because of it, an occupational disease renders him incapable of performing his customary work. It has been argued, said the court, that if an employee is entitled to compensation, as he is when he voluntarily ceases work because of physical incapacity to continue, then an employee who is discharged by his employer because of potential physical disability is equally entitled to compensation. For the latter contingency, however, the present law, which was framed to cover injuries resulting from accident, rather than incapacity resulting from occupational disease, affords no relief. An employee who has been exposed to industrial hazards, who has suffered no "physical disability" that prevents his performing his work in his usual and customary way, and who is discharged because an examination discloses that such disability may arise in the future, is not entitled to compensation for "medical disability."

It has been argued that it is against public policy to permit an employer to discharge an employee who has been exposed to industrial hazards, in order to anticipate his employee's future disability. That, however, said the Supreme Court, is a problem for the legislature and not for the courts. The courts can do nothing more than interpret and administer the statute. The remedy lies solely with the legislature. Finding no evidence to show that the claimants suffered disability within the meaning of the law during the period of their employment with the North End Foundry Company, nor until after the relation of employer and employee had been terminated, the judgments of the courts below in the several cases were reversed and remanded with instructions to enter judgments setting aside the awards of the industrial commission.—*North End Foundry Co. v. Industrial Commission (Wis.), 258 N. W. 439.*

Libel and Slander: Imputing Drunkenness and Untruthfulness to Physician Slanderous Per Se.—The Industrial Life & Health Ins. Company promised to pay certain benefits to Anna Washington in event of the illness of her son. The son became ill and was treated by the plaintiff in this case, a physician. Thereafter the mother applied to the local agent of the insurance company for a claim blank, which he refused to give her. She then obtained from the plaintiff a statement certifying to her son's illness and forwarded it to the company. The claim not having been paid, the mother asked the local agent of the insurance company the reason. He replied that her son had not been sick and, referring to the plaintiff, told her in the presence of a third person, "Your lying, drunken friend fixed up that slip to send to the company and I told them not to pay it." On being informed of the agent's statement, the plaintiff sued the insurance company and its agent for slander. The trial court gave judgment for the plaintiff, and the insurance company appealed to the Supreme Court of South Carolina.

In determining whether the words used were slanderous without proof of actual injury to the plaintiff, the court quoted from *Boling* v. *Clinton Cotton Mills,* 163 S. C. 13, 161 S. E. 195, as follows:

> In 36 C. J. 1170, it is said: "Oral imputations of falsehood are not actionable per se unless they charge a crime or affect one in his business or profession." In view of the fact that the natural effect of the charge of falsehood to the minister was calculated to expose him to public hatred, contempt, ridicule, aversion, or disgrace, to induce an evil opinion of him in the minds of right-thinking persons, to deprive him of that friendly intercourse and society, and calculated to seriously affect his usefulness in his profession as a minister, the statement alleged was actionable per se.

In the case cited, said the Supreme Court, the person alleged to have been slandered was a minister; in this case he is a physician. The relation of trust and confidence existing between a physician and his patients is often as close as that existing between a minister and his congregation. The oral imputation that a physician is a liar and a drunkard is certainly calculated to affect his business or profession and to injure him in the community in which he gains his livelihood. Such words addressed to such a man are undoubtedly slanderous per se. A charge that a physician is a liar and a drunkard, however, does not impute gross ignorance or unskilfulness or the commission of a crime, and when the trial court instructed the jury, at the request of the plaintiff, that to charge a professional man with acts or omissions that clearly impute to him gross ignorance or unskilfulness or the commission of a crime for which he could be indicted, tried and punished would justify an award of damages, it injected into the case issues that were prejudicial to the defendant. For that reason, the judgment of the trial court was reversed and the cause remanded for a new trial.—*Harper v. Industrial Life & Health Ins. Co. of Atlanta, Ga. (S. C.), 177 S. E. 787.*

Workmen's Compensation Acts: Activation of Tuberculosis by Injury; Compensability.—Morrill, a granite cutter, while operating a silicon carbide saw for the defendant, August 27, fell and injured his left hip, side and chest. At the time he was apparently in good health and able to work, although he was suffering from silicosis and latent tuberculosis. On the day following the accident he went to bed, where he remained until his death, October 8, from acute pulmonary tuberculosis. His widow brought proceedings under the workmen's compensation act of Vermont to recover compensation for herself and her children. From an award in her favor, but denying the compensation to her children, confirmed by the county court, she appealed to the Supreme Court of Vermont, as did also the employer.

There is no question, said the Supreme Court, but that Morrill sustained personal injuries by accident. Compensation is not allowable if death resulted solely from a so-called occupational disease. The question, then, is whether Morrill's disability and death resulted from the accident. The evidence tended to show that the injuries resulting from the accident "lighted up," aggravated or accelerated a preexisting disease and caused death earlier than otherwise would have been the case. It is not apparent that the nature of silicosis from which Morrill was suffering, whether it was an occupational disease or not, is material to the determination of the question of compensability. It cannot be that one who has incipient silicosis is precluded from compensation when injured, because the silicosis from which he is suffering, or ailments consequent on it, might ultimately result in disability or death. The compensation act prescribes no standard of fitness to which an employee must conform, and compensation is not based on any implied warranty of perfect health or immunity from latent and unknown tendencies to disease that may develop into positive ailments if incited into activity by accidental injury. Although Morrill's disability and death were due to the development of a disease that he had in his system when he was injured, if his injuries were a contributing and proximate cause of such development, the disease, in the opinion of the court, "resulted from the injury" within the meaning of the workmen's compensation act and the motion of the defendant for a directed verdict was properly denied by the trial court. The judgment of the trial court in favor of the claimant, but denying compensation to her children because they were not shown to be dependents of the deceased, was affirmed.—*Morrill v. Charles Bianchi & Sons, Inc. (Vt.), 176 A. 416.*

Vaccine: Liability of Manufacturer for Death Following Administration of Antirabic Vaccine; Res Ipsa Loquitur Not Applicable.—Tremaine, a veterinarian, was bitten by a dog. He and his wife administered, by hypodermic injection, according to directions, thirteen doses of a "fourteen-dose" treatment of "killed bacteria" antirabic vaccine, procured from the defendant company. After the thirteenth dose, lumps formed in his abdominal wall at the sites of injection and he was unable to take the fourteenth dose. On the eighteenth day after beginning treatment one of his legs became paralyzed. About nine months later he died of inflammation of the spinal cord. A few years before he had taken a twenty-one dose treatment of "live bacteria" antirabic vaccine without ill effect. His widow sued the defendant company, the maker of the vaccine. The jury returned a verdict in her favor, but the trial court entered a judgment for the defendant company notwithstanding the verdict. Thereupon the widow appealed to the Supreme Court of Pennsylvania.

The plaintiff's theory was that the vaccine was not sterile and that it was unsafe and unsuitable for the purpose intended in that it contained organisms and other ingredients which were destructive to human life. She alleged that the injection of such vaccine caused the illness and death of her deceased husband. One of the medical expert witnesses called by the plaintiff stated that inflammation of the spinal cord might be caused by injury to the cord or by infection and that it might originate without discoverable cause. Another such witness said that the deceased's illness was due to the injection of the antirabic vaccine. There was no testimony, however, to show that the vaccine was improperly or negligently prepared.

The plaintiff, said the Supreme Court, totally failed to prove the negligence alleged, and it could not reasonably be inferred from the evidence that the defendant company's conduct was a substantial factor in bringing about harm. The fact that the deceased administered to himself or had administered to him serum made by the defendant and that he thereafter became ill and died does not constitute legal proof that his death was caused by the serum or that the serum was "negligently, carelessly and improperly prepared, and unfit, unsuitable and unsafe for the purpose intended." In *Nixon* v. *Pfahler,* 279 Pa. 377, 124 A. 130, the court had said that it had never applied the rule of res ipsa loquitur against a medical practitioner, "who is within the general rule that negligence will not be presumed from the mere happening of an accident."

Proof as to cause of death, said the court, lacked much in positiveness. The expert testimony was to the effect that by eliminating all other causes the conclusion was reached that the sickness of the deceased was caused by the injections of the antirabic vaccine and that death followed infection from it. But this testimony, said the court, did not exclude the hypothesis that the illness might have been due to carelessness in administering the vaccine or to the patient's systemic repug-

nance to it. And even if the court should assume that death was caused by the serum, the charge that the serum was negligently prepared would still be without evidentiary support.

In the absence of evidence to the contrary, said the court, the presumption is that the serum furnished by the defendant was not negligently prepared and that it was safe for the intended use. The fact that the plaintiff failed to produce an analysis of the unused fourteenth dose of vaccine, which was in her possession, supported an inference adverse to her. Such an adverse inference was within the province of the jury. The entry of judgment notwithstanding the verdict was based, however, not on an inference but on the failure of the plaintiff to furnish adequate evidence to support her contention that her deceased husband's illness and death were due to deleterious serum negligently prepared and supplied by the defendant. Accordingly, the court held that a judgment for the defendant company notwithstanding the verdict was warranted and it therefore affirmed the judgment of the trial court.—*Tremaine v. H. K. Mulford Co. (Pa.), 176 A. 212.*

Accident Insurance: Death Under Spinal Anesthesia and Appendectomy an "Accidental Event."—The defendant insurance company insured Whatcott against death "resulting from a personal bodily injury which is effected solely and independently of all other causes by happening of an external, violent and purely accidental event." Under spinal anesthesia produced by injecting procaine hydrochloride into the spinal canal, the insured was operated on for chronic appendicitis. He died while the operation was in progress. The plaintiff, the beneficiary under the insurance policy, sued the insurer to compel the payment of the amount promised in the policy, alleging that an idiosyncrasy or hypersusceptibility of the insured to procaine, together with the abdominal incision, was the sole cause of his death, and that death was an "accidental event" within the meaning of the policy. From a judgment in favor of the insurance company, the beneficiary appealed to the Supreme Court of Utah.

In numerous cases, said the Supreme Court, in which insurance policies have promised benefits only in case of injury or death caused by *"accidental means"* the conclusion has been reached that unexpected results caused by intentional acts are not covered by the policies. In other words, it has been held that the *means* by which injury or death has been produced were not accidental means. In Utah, however, a contrary rule has been laid down and the beneficiary under such a policy is entitled to recover benefits for injury or death from the unusual or unexpected results of an intentional act, even though such results occur without mischance, slip or mishap. The court called attention, too, to the fact that the policy to be construed in the present action did not insure against the results of accidental *means* but against injury caused by the happening of an accidental *event*. The means may not in any way have been accidental, yet the event, because of some unknown and unknowable factor, may have been highly accidental. The death of the insured was an event which, if the testimony of one of the expert witnesses for the plaintiff was to be believed, was the unexpected and unusual effect of the injection of procaine into the spinal canal and hence was an accidental event within the meaning of the policy.

The instructions of the trial court that required the plaintiff to prove that the intraspinal injection of procaine was the sole cause of her husband's death, to the exclusion of any effect that may have been produced by the incision, were erroneous. The evidence showed without conflict that it was very unusual for a person to die as the result of an incision such as that made in the abdomen of the deceased. Death from an incision is no less an accidental event than is death caused by the injection of procaine. Death caused by either or both was, according to all the evidence, an unusual event which could not be foreseen and which could not be reasonably expected. An event, such as the death of the insured, which is unusual and unexpected is none the less an accidental event when it results from two causes rather than from a single cause.

The judgment of the trial court in favor of the insurer was reversed and the cause remanded for a new trial.—*Whatcott v. Continental Casualty Co. (Utah), 39 P. (2d) 733.*

Workmen's Compensation Acts: Death from Tuberculosis Activated by Silica Dust an Accidental Injury.—Beaver entered the employ of the Morrison-Knudsen Company in 1928. At that time he had tuberculosis in an arrested stage but otherwise seemed to be in good physical condition. He was able to carry on regular manual labor. In the course of employment he was subjected to clouds of dust, containing from 80 to 85 per cent silica, and was more or less bothered by coughing, which became more frequent as time passed. In 1931 he became ill with active tuberculosis and filed a claim under the workmen's compensation act of Idaho. After the hearing before the industrial accident board Beaver died, and his administratrix was substituted as claimant. From a judgment of the district court affirming a decision of the board disallowing compensation, the claimant appealed to the Supreme Court of Idaho.

It seems clear from the evidence, said the Supreme Court, that the inhalation of silica dust activated a latent tuberculous condition in the employee's lungs, which in 1931 suddenly lighted up and resulted in death. No one was able to testify as to the specific time when the injury was received or the fatal draft of dust was inhaled. Who can in truth and fairness say that there was not a compensable "accident"? All accidents are preceded by a cause; in some cases that cause may have operated instantaneously; in others it may have been operating for days, months or years, and ultimately the accident occurs and the "blow up" happens. A workman works for years on a given job in which he regularly has to lift a considerable weight. In the course of time his heart grows weaker. Eventually he lifts a similar load, his heart fails and he dies. He has overstrained himself in lifting the load and it is said to be an "accident" arising out of his employment. *In re Larson,* 48 Idaho 136, 279 P. 1087. Strain may impair or rupture some other part of the body so that the final effort at labor accomplishes the breakdown, and it is held to be an "accident." *Hanson v. Independent School District 11-J,* 50 Idaho 81, 294 P. 513. In principle, said the court, the cases cited are not dissimilar from the one here under consideration. In view of the facts and circumstances bearing on the injury in this case, said the court, and of the uniform purpose of the court to give the workmen's compensation law a liberal construction in favor of the injured workman, we are constrained to hold that the workman in this case met with an "accident" in the course of his employment and was entitled to compensation.

The judgment of the lower court was reversed, with directions to remand the case to the industrial accident board with instructions to enter judgment in favor of the claimant.—*Beaver v. Morrison-Knudsen Co. (Idaho), 41 P. (2d) 605.*

Society Proceedings

COMING MEETINGS

American Academy of Tropical Medicine, St. Louis, Nov. 20-21. Dr. Earl B. McKinley, 1335 H Street N.W., Washington, D. C., Secretary.

American Association of Railway Surgeons, Chicago, November 13-15. Dr. Louis J. Mitchell, 86 E. Randolph St., Chicago, Secretary.

American Clinical and Climatological Association, Princeton, N. J., Oct. 21-23. Dr. Francis M. Rackemann, 263 Beacon Street, Boston, Secretary.

American College of Surgeons, San Francisco, October 28-November 1. Dr. George W. Crile, 40 East Erie St., Chicago.

American Society of Tropical Medicine, St. Louis, November 19-22. Dr. Alfred C. Reed, 350 Post Street, San Francisco, Secretary.

Association of American Medical Colleges, Toronto, Canada, Oct. 28-30. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.

Central Society for Clinical Research, Chicago, Nov. 1-2. Dr. Lawrence D. Thompson, 3720 Washington Boulevard, St. Louis, Secretary.

Clinical Orthopedic Society, Indianapolis and Louisville, Nov. 15-16. Dr. J. E. M. Thomson, 1307 N Street, Lincoln, Neb., Secretary.

Nevada State Medical Association, Elko, Oct. 25-26. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, Los Angeles, Nov. 6-9. Dr. T. Floyd Bell, 400 29th Street, Oakland, Calif., Secretary.

Radiological Society of North America, Detroit, Dec. 2-6. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Southern Medical Association, St. Louis, November 19-22. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Hot Springs, Va., Dec. 10-12. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Rochester, Minn., Dec. 6-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

5: 41-100 (Aug.) 1935

Skin Grafting: Its Relation to General Surgery. N. Owens, New Orleans.—p. 41.

Acute Pancreatitis Necrosis: Acute Hemorrhagic Pancreatitis. D. C. Donald, Birmingham.—p. 47.

Chronic Undulant Fever: More Critical Consideration of Neurasthenic Syndrome: Hyperthyroidism an Underlying Condition. E. Thames, Mobile.—p. 54.

American Journal of Cancer, New York

24: 751-1024 (Aug.) 1935

*Peripheral Manifestations of Specific Nerve Sheath Tumor (Neurilemoma). A. P. Stout with assistance of W. Carson, New York.—p. 751.

Fatty Tissue Tumors of Breast. J. G. Menville, New York.—p. 797.

Quantitative Study of Growth of Walker Rat Tumor and Flexner-Jobling Rat Carcinoma. R. Schrek, Nashville, Tenn.—p. 807.

Carcinoma of the Mammary Gland in Inbred Stock of Albino Mice. A. C. Williams, L. E. Silcox and B. Halpert, New Haven, Conn.—p. 823.

Carcinoma Metastases to Heart and Subcutaneous Tissues. W. D. Nusbaum, Lancaster, Ohio, and F. W. Heyer, Nanticoke, Pa.—p. 831.

*Spontaneous Regression of Hypernephroma. M. Viola Rae, Calgary, Alta.—p. 839.

Peripheral Manifestations of Specific Nerve Sheath Tumor.—Stout synthesizes the clinical and pathologic features of the specific nerve sheath tumor as it occurs outside the cranium and spinal canal from a study of fifty new cases and a review of 194 published reports of cases. He proposes the term "neurilemoma," meaning "nerve sheath tumor." The tumor is found within or attached to the sheaths of nerves of various sizes and causes few symptoms other than those due to the presence of the mass. Pain, tenderness and paresthesia are symptoms in less than half the cases. Intracapsular degeneration is common and permits transillumination of some tumors. The neoplasm is encapsulated and has a specific morphology that differentiates it from the neurofibroma and all other tumors. While it occurs in cases of von Recklinghausen's disease, its exact relation to the latter condition is unknown. The neurilemoma occurs commonly only in definite localities, rarely in others, and has never been found in the feet, the genito-urinary system, the lungs, the esophagus or the rectum. The tumor grows slowly and is entirely benign. It is best treated by surgical removal. If the nerve involved is an important one, the tumor should be dissected out of its capsule with as little damage as possible to the nerve fibers. If the nerve is small and of little relative importance, it is usually not seen and is resected with the tumor capsule without untoward effects. Only one authentic example of local reappearance after excision has been reported. Although several cases of apparent malignant metamorphosis of neurilemoma have been reported, in none of them is the evidence of sufficient weight to permit a positive statement that this change ever occurs.

Spontaneous Regression of Hypernephroma.—Rae calls attention to a large tumor of the kidney that had undergone necrosis and calcification. The case is an instance of almost complete regression of a malignant tumor. The finding of a small piece of viable tumor indicates that growth was not entirely abolished. The process by which regression was instituted is not clear. Total thrombosis or infarction of the tumor is ruled out by the existence of capillary blood spaces containing normal blood within the remnants of tumor tissue. No obvious systemic or metabolic conditions occurred that might be related to the process of healing. It is only possible to suggest that some complex form of local or general immunity developed, which established retrogressive changes in the tumor. From the gross appearance of the tumor and its location in the kidney, it was considered to be a calcified hypernephroma. The discovery of small groups of typical nephroma cells definitely decided the diagnosis. Sections from the remaining portion of the kidney showed no evidence of tumor invasion. A small atrophic left adrenal that was not involved in the tumor was removed at operation.

American Review of Tuberculosis, New York

32: 127-228 (Aug.) 1935

Postwar Changes in Trend of Tuberculosis Mortality. J. H. Watkins, New Haven, Conn.—p. 127.

Tuberculosis Among Rural and Village School Children in Buncombe County, North Carolina. P. P. McCain, Sanatorium, N. C.; C. D. Thomas, Danville, Va., and H. L. Sumner, Asheville, N. C.—p. 150.

Follow-Up Study of Medical Student and Physician Patients Discharged from Trudeau Sanatorium, 1916-1931. R. R. Bates, Boston.—p. 161.

Incidence of Tuberculous Infection and Disease in Private School for Boys. T. N. Horn, Bloomfield Hills, Mich.—p. 166.

Tuberculosis Among University of Wisconsin Students. R. H. Stiehm, Madison, Wis.—p. 171.

Study of Racial Incidence of Tuberculosis in the Province of Manitoba. C. H. A. Walton, Winnipeg, Manit.—p. 183.

*Age Distribution and Pathogenesis of Tuberculous Meningitis in Children. M. Siegel, New York.—p. 196.

Silicosis and Silicotuberculosis Census: Response of Silicotuberculosis to Treatment: Preliminary Report. D. M. Brumfield and L. U. Gardner, Saranac Lake, N. Y.—p. 208.

The Place of the Laboratory in the Sanatorium. H. S. Willis, Northville, Mich.—p. 211.

*Attempt to Desensitize Tuberculous Guinea-Pigs with Dead Vaccine and Products of Tubercle Bacillus. C. L. Derick, E. A. G. Branch and M. P. Crane, Boston.—p. 218.

Tuberculous Meningitis in Children.—Siegel analyzed the ages in 445 cases of tuberculous meningitis among 742 children who died of tuberculosis at the Josef-Kinderspital, Mount Sinai Hospital and Sea View Hospital. A similar analysis was made of about 3,000 cases of tuberculous meningitis reported in the literature in the last thirty years. Of the total cases in childhood, there were 57 per cent in the first three years, 26 per cent in the next three years and 17 per cent between 6 and 12 years of age. The greatest number of cases occurred between the ages of 9 and 15 months. No undoubted case of tuberculous meningitis was reported in infants who died at the age of less than 2 months of either acquired or congenital tuberculosis. There were a few cases of tuberculous meningitis in the third month. At this age the percentage of cases of lethal tuberculosis with meningitis was low (7.9 per cent). After the third month the incidence of tuberculous meningitis in infants who died of tuberculosis increased markedly, reaching 33 per cent in the fourth month and 50 per cent in the sixth month. The proportion gradually increased in older infants and reached its maximum (about 80 per cent) in the third and fourth years. There were no cases of tuberculous meningitis in sixty-eight cases of acute meningitis in infants less than 2 months of age. About 90 per cent of these cases were caused by the streptococcus, colon bacillus, pneumococcus and meningococcus. Tuberculous bacillemia is the precursor but not the direct cause of meningitis, which may eventually result from extension of a local tuberculous focus into the subarachnoid space or ventricles. The incidence of tuberculous meningitis in lethal tuberculosis, as reported from various hospitals, depends largely on the type of tuberculous case admitted to these hospitals and on the duration of hospitalization.

Attempt to Desensitize Tuberculous Guinea-Pigs.—Derick and his associates used four antigens in their desensitizing experiments: heat-killed and formaldehyde-killed tubercle bacilli, Koch's bacillary emulsion and a protein fraction from the tubercle bacillus. By using quantitative skin tests they have obtained some evidence of desensitization by the use of heat-killed vaccine, but not by the use of the other antigens. A substantial prolongation of life followed the use of heat-killed vaccine only, although in the series receiving the bacillary emulsion several animals showed little or no tuberculosis at the time of death. It must not be assumed, however, that all animals with a negative skin test outlived the others or that those with a strongly positive test died earliest. They believe that dosage may be an important factor, and this is difficult to grade, since there may be a delayed response following the use of whole bacterial vaccine in particular. The intravenous

method of inoculation in the doses used proved too severe and had to be discontinued. None of the antigens used can be considered ideal, though heat-killed vaccine seems to have definite value. In common with other workers, the authors found that it is much more difficult to diminish the hypersensitive state of animals when this state is due to infection with the tubercle bacillus than when due to other organisms, such as the streptococcus, in spite of the fact that every attempt was made to keep the latter animals hypersensitive by repeated injections of living organisms or the subcutaneous presence of infected agar foci. An explanation of these differences is not forthcoming at present. During the course of their work, skin tests were done on several patients as well as on themselves. The test doses used were 0.1 cc. of a 1 : 100,000 dilution of unheated tuberculin and 0.1 cc. of an emulsion containing 1,000,000 heat-killed tubercle bacilli per cubic centimeter. One of the authors reacted violently to the tuberculin in twenty-four hours, but only a slight reaction was noted at the site of the injected vaccine until ten days later. The latter then proceeded to become inflamed. It ruptured finally and drained for a period of two weeks and then healed, leaving a small white scar. This result would appear to be of great importance if one contemplates using whole tubercle bacilli for purposes of vaccination. Since any attempt to increase dosage should be based on the reaction to the previous inoculation, there should be a considerable interval between treatments. Also, the initial inoculation of whole organisms should be much smaller. Another one of the authors did not react to either of the dilutions mentioned, making one doubtful of the clinical value of the tuberculin test, since the former individual has never had active tuberculosis while the latter has had.

Annals of Surgery, Philadelphia

102: 161-320 (Aug.) 1935

Treatment of Bronchial Asthma by Dorsal Sympathectomy: Direct and Indirect. G. L. L. Levin, Leamington Spa, England.—p. 161.
Mesenteric Vascular Occlusion. H. Sneierson, Binghamton, N. Y.—p. 171.
Perforated Ulcers of Duodenum: Study of Forty-One Cases. E. C. Brenner, New York.—p. 185.
*Enlargement of the Gallbladder. R. F. Carter, New York.—p. 194.
Relation of Cholecystitis to Pathologic Changes in the Liver. R. Colp, H. Doubilet and I. E. Gerber, New York.—p. 202.
The Sequels After Cholecystostomy, with Especial Reference to Cholelithiasis. W. H. Barber and F. M. Harrison, New York.—p. 218.
*Histologic Grading of Mammary Carcinoma in a Series Followed for Ten Years. L. Sophian, New York.—p. 224.
Cancer of the Breast: Early Diagnosis of Cancer of the Breast. R. B. Greenough, Boston.—p. 233.
Id.: Biopsy in Breast Lesions in Relation to Diagnosis, Treatment and Prognosis. J. C. Bloodgood, Baltimore.—p. 239.
Id.: Classification of Mammary Cancer. J. Ewing, New York.—p. 249.
Id.: Surgical Principles in Cancer of the Breast. D. Lewis, Baltimore.—p. 252.
*Id.: Value of Preoperative Irradiation in Breast Cancer: Studies on Eighty-One Operable Cases. F. E. Adair and F. W. Stewart, New York.—p. 254.
Bone Growth and Repair. D. B. Phemister, Chicago.—p. 261.
Treatment of Tuberculosis of Spine in Young Children. E. L. Compere and J. T. Jerome, Chicago.—p. 286.
*Modification of Operation for Spinal Fusion. A. Gruca, Lwów, Poland.—p. 297.
Ligation of Varicose Veins: Ambulatory Treatment Preliminary to Sclerosing Injections. L. K. Ferguson, Philadelphia.—p. 304.

Enlargement of the Gallbladder.—Carter mentions that during a period of four years in studying patients having disease of the gallbladder the medical and surgical clinic of the New York Post Graduate Hospital has gradually come to realize the importance of changes in the size and contour of the gallbladder. In patients with typical gallbladder symptoms, definite pathologic changes were found to be present and borne out by operative observations even though the roentgenogram showed repeatedly the absence of positive or negative shadows of stones and normal filling and emptying. The most important change is enlargement, for in enlargement one has a definite result of stasis, the most frequent accompaniment of gallstones found in operative specimens. Enlargement of the gallbladder, as shown by roentgen shadows and in operative specimens, follows, in the main, a hypotonic and a hypertonic type. In the former, a rounded balloon type of shadow appears. The latter types are elongated, tubular and pear shaped, with convolutions in the ampulla and cystic duct. The hypotonic type of gallbladder shadow is found in individuals having few symptoms attributable to the organ directly, but with the usual type of dyspepsia associated with the achylia, overweight and indolence of middle age. The hypertonic type of gallbladder shadow is found in individuals having marked symptoms of pain and attacks of colic, frequently requiring sedatives long before stones can be demonstrated roentgenologically or in operative specimens, accompanied by the usual type of dyspepsia associated with hyperacidity, pylorospasm and duodenitis. The changes in the shape and size of both types of gallbladders are depicted by sixteen illustrations.

Histologic Grading of Mammary Carcinoma.—Sophian carried out a histologic analysis of 124 cases of mammary carcinoma treated by radical operation and followed for a period of ten years or longer. A definitely lower incidence of axillary metastases at the time of operation was noted in the cases with grades 1 and 2 adenoid arrangement, compared with those growing in solid cords and masses (grade 3). This fact appears to account for the previously recognized favorable clinical aspect of the adenocarcinoma. Degrees of fibrosis appeared to exert no influence. Marked lymphocytic infiltration (grade 1) was noted in a group which had a slightly better clinical result than that without this feature. The most significant correlations of clinical outcome and grading appeared in respect to adenoid arrangement, nuclear constancy, nuclear size, mitoses and secretion. The few cases in this series with papillary and comedo arrangement were found to have had a more favorable course. By a method of combining the information concerning each of the criteria employed, a grading of each case was achieved which shows a definite statistical parallelism with the percentage of ten year cures. This is found to depend on the incidence of cases without axillary metastases. The cases with metastases show uniformly poor ten year results, probably because of the advanced stage of the disease at the time of treatment. Since such cases outnumbered the favorable ones more than two to one, it becomes evident that the invisible extensions of carcinoma not recognizable at the time of operation form the major controlling factor in the prognosis of the individual case. The histologic analysis indicates nevertheless a relatively slower or more rapid clinical course according to the grade of the tumor.

Preoperative Irradiation in Breast Cancer.—Adair and Stewart employed preoperative irradiation in eighty-one cases of operable mammary cancer. Thirty-nine cases were treated by the radium element pack and forty-two were treated by the high voltage (200 kilovolt) roentgen rays. From two to three months after the completion of the irradiation, a radical amputation was performed. Careful tissue studies were then made of the residual tumor. A positive aspiration biopsy complemented the clinical diagnosis. Into a rubber catheter were inserted in tandem form six silver tubes containing radium emanation, each 16 mm. long. These capsules were separated from one another by a cord knot so that there was a space between the capsules of about 3 mm. The filter of the capsule is equivalent to 1 mm. of platinum. The length of the radium bearing area is about 11 cm. Under local anesthesia a long uterine dressing forceps with a slight curve at the end of the blade was pushed through the axillary fascia, parallel to the axillary vein, going behind the pectoralis major muscle and the pectoralis minor muscle. The point of the clamp was then brought up through the pectoralis major muscle and on through the integument at the edge of the sternoclavicular joint. Procaine hydrochloride was used only at the site of entrance through the skin of the axilla and at the site of emergence at the sternoclavicular joint. The point of the dressing forceps while still in place grasped the free end of the catheter, which was then pulled backward through the tract by the forceps. The radium string was held accurately in place by one suture. The authors began by using three skin erythema doses 3 mm. from the source of the radium. This amount has been gradually increased to seven skin erythema doses, and during this time neuritic symptoms have not appeared. In the study of cases in which treatment by the radium pack was employed, it was found that when 20,000 millicurie hours was employed per port there was no case of a persistent ulcer of the skin. When 24,000 millicurie hours was used per port, a persistent ulcer of the breast occurred in 60 per cent of twenty cases. Furthermore,

when the cases were treated by 24,000 millicurie hours per port, the largest group of completely destroyed tumors occurred. This was likewise true in the successful destruction of the nodes. From a study of the lesions it seems that a tumor having a diameter of 2 or 3 cm. has a much better opportunity of complete regression than one of great bulk. In the cases in which high voltage roentgen therapy was employed the skin, although markedly damaged, usually cleared up within from two to three weeks after the completion of treatment. The radium pack produces a slower skin damage than high voltage roentgen therapy. In some of the cases treated by the 200 kilovolt apparatus 1,200 roentgens was given to each of six ports; in some cases 1,500 roentgens per port was given, and in a few, 1,800 roentgens. Five-tenths mm. of copper filter was used. This dose was somewhat lighter in most instances than the doses delivered by the radium pack; however, there were seven cases in which complete microscopic disappearance of the tumor occurred. External irradiation as applied in this series did not effectively combat axillary disease, and this fact points to the necessity of additional interstitial irradiation. It is the authors' impression that eventually irradiation will be with smaller doses extended over a longer period and that end results will be improved thereby; that the five-year cures will be definitely increased by the employment of preoperative irradiation, and that it should be employed in all instances of cancer of the breast complicated by pregnancy, in cases of bulky axillary disease and in cancer in young women.

Modification of Operation for Spinal Fusion.—The operative method that Gruca describes differs from other procedures in that: 1. It brings the point of action of the operation close to the lesions in the bodies of the vertebrae. 2. The implanted graft is situated almost entirely within bone tissue. 3. Fusions of the laminae, joints and the spinous processes proceed rapidly. 4. The operation does not damage any of the elements normally immobilizing the spine, such as the ligaments and muscles. 5. The biologic influence of the graft, owing to its situation close to the foci and within the bone tissue, is rapid, conspicuous and of long duration.

Archives of Internal Medicine, Chicago

56: 211-412 (Aug.) 1935

Pathology of Vessels of Pulmonary Circulation: Part I. O. Brenner, Birmingham, England.—p. 211.
Cardiovascular Complications of Trichinosis. W. W. Spink, Boston.—p. 238.
*Obstructing Pericarditis: Effect of Resection of Pericardium on Circulation of Patient with Concretio Cordis. C. S. Burwell and D. Flickinger, Nashville, Tenn.—p. 250.
*Pulmonary Tuberculosis of Lower Lobe. D. Reisner, New York.—p. 258.
Stab Wounds of the Heart: Study of Electrocardiographic Changes, Polyserositis (Pick's Syndrome) and Pericarditis. J. D. Koucky and G. Milles, Chicago.—p. 281.
*Infection and Hemorrhagic Nephritis. W. L. Winkenwerder, N. McLeod and M. Baker, Baltimore.—p. 297.
Viscerogalvanic Reaction. E. A. Spiegel and M. G. Wohl, Philadelphia.—p. 327.
*Effect of Diuretics on Cardiac Output of Patients with Congestive Heart Failure. B. Friedman, New York; H. Resnik Jr., Nashville, Tenn.; J. A. Calhoun, Boston, and T. R. Harrison, Nashville, Tenn.—p. 341.
Teaching Medical Students Objectives for Care of Patients and Social Aspects of Illness. Ethel Cohen and H. A. Derow, Boston.—p. 351.
Increased Effectiveness of Insulin When Given by Injections of Doses of Equal Unitage at Intervals of Two to Four Hours: I. Use of Insulin in Divided Doses to Manage Severe Uncomplicated Diabetes and to Control Complicated Medical Cases. B. B. Clark, R. B. Gibson and W. D. Paul, Iowa City.—p. 360.
Influence of Dinitrophenol on Carbohydrate Metabolism. M. Wishnofsky, A. P. Kane, E. L. Shlevin and C. S. Byron, Brooklyn.—p. 374.

Obstructing Pericarditis.—Burwell and Flickinger cite a case in which a high degree of obstructing Staphylococcus aureus pericarditis was present. Removal of a portion of the pericardium was followed by a fall in venous pressure, a rise in cardiac output and an increase in pulsation of the heart. Increased venous pressure and decreased cardiac output appear to be the chief mechanisms underlying the symptoms and signs of concretio cordis. The period before operation was marked by a continuous rise in the venous pressure. When the patient was last seen, eight months after operation, the venous pressure as measured on the arm was found to be 125 mm. of water. After the operation, four determinations of the cardiac output were made. The total output varied between 2.5 and 3.8 liters, and the arteriovenous difference between 72 and 92 cc. per liter. The last observations, made several weeks before the patient's discharge, showed a cardiac output of 3.8 liters and an arteriovenous difference of 72 cc. These figures are within the limits of normal. Even the output per beat increased and reached 35 cc. The cardiac output rose as the venous pressure fell and as the patient's strength and comfort increased.

Tuberculosis of the Lower Lobe.—Reisner discusses the subject of pulmonary tuberculosis of the lower lobe in adults, with particular attention to the early reinfection changes. Strictly basal tuberculosis must be differentiated from lesions involving the superior portion of the lower lobe. Early changes limited to the base of the lung are extremely rare, whereas the apical and subapical regions of the lower lobe represent a typical site of predilection for initial manifestations in the adult form of phthisis. This area is also a fairly frequent location of early bronchogenous metastases in progressive tuberculosis of the upper lobe. The tuberculous changes occurring in the apex of the lower lobe are almost invariably of the exudative and caseous type, with early cavity formation. Collapse therapy is the only effective treatment and artificial pneumothorax is the procedure of choice, despite the location in the lower lobe. The roentgen observations in tuberculosis of the lower lobe are discussed, and it is emphasized that changes in its apical region frequently present the misleading appearance of so-called hilus lesions. It is also stressed that in general there is no adequate foundation for the conception of a hilar form of pulmonary tuberculosis as a pathogenic entity. Tuberculosis of the lower lobe occurs principally in women and is very uncommon in men. An explanation of this difference in the behavior of the sexes has been attempted on the basis of existing physiologic variations in the respiratory mechanism.

Infection and Hemorrhagic Nephritis.—Winkenwerder and his associates submit an analysis of the relationship between infection with Streptococcus haemolyticus and hemorrhagic nephritis in a series of seventy-eight cases observed for from one to eight years. Twenty-two of the patients are well, twenty-one are in the latent stage of the disease, seventeen are in the progressive stage and nineteen are dead. Infections, usually of the upper respiratory tract, caused by Streptococcus haemolyticus (alpha type, in a few cases), preceded the onset of hemorrhagic nephritis in the great majority of cases in this series. Streptococcus haemolyticus is apparently related to the progress of nephritis, for the numbers in which it occurred diminished markedly during recovery but persisted during the progressive stages of the disease. The cases of hemorrhagic nephritis that were preceded by acute infection manifested by both local and constitutional reactions almost always ended in recovery or entered the latent phase; the cases of nephritis associated with chronic infection at the onset almost always became progressive. The prodromal period between the beginning of infection and the onset of nephritis varied from three to twenty-eight days. A seasonal variation in the onset of hemorrhagic nephritis coincided with the months during which respiratory infections are most frequent. Exacerbations of nephritis in most instances followed streptococcic infections of the upper respiratory tract; these exacerbations occurred more frequently in the latent and in the progressive stages of the disease. The prodromal period between infection and the exacerbation of the nephritis was usually from twenty-four to forty-eight hours, in contrast to the prodromal period at the onset of nephritis. Exacerbations also occurred without relation to infection and also after operative procedures. Streptococcic infections that occurred during the convalescent stage did not prevent recovery from nephritis and rarely caused relapses, whereas the "carrier state" was characteristic of the progressive stage of hemorrhagic nephritis. Surgical removal of foci of infection may fail to influence the outcome of hemorrhagic nephritis. The authors suggest that recovery from or progression in hemorrhagic nephritis is related more to the character of the causal infection; a severe acute infection presages a favorable course and a chronic infection an unfavorable outcome. Patients with acute infection possess the capacity to react to Streptococcus haemolyticus, so that some form of resistance to the infection develops, and as a result recovery

from nephritis follows and disappearance of the organism occurs. In patients with chronic infection, this capacity to react to streptococcic infection is lacking.

Effect of Diuretics on Cardiac Output in Congestive Heart Failure.—From a study of the effect of diuretics on cardiac output in cardiac disease, Friedman and his associates conclude that diuretics may possibly have a twofold action on the circulation: 1. Reduction of peripheral edema may be associated with a decrease in the flow of blood through edematous tissues in proportion to the metabolism. The resulting decline in venous return and in venous pressure tends to decrease the output of the heart. 2. Reduction of myocardial edema may lead to an increase in the contractile power of the heart and consequent increase in output. The final result may be a rise, a fall or no change in cardiac output. The important point is that diuretic drugs appear to aid the heart by (1) decreasing its load and (2) increasing its ability to carry the load. Either of these effects tends to produce benefit by diminishing the energy expended by the heart. Whenever rest, reduction of the intake of fluids, digitalis and sedatives fail to produce clinical improvement in patients with congestive heart failure, diuretic drugs, the authors believe, should be given a trial, even though there may be no obvious subcutaneous edema.

Journal of Comparative Neurology, Philadelphia

62: 1-262 (Aug. 15) 1935

Efferent Nerve Fibers in Lumbar Dorsal Roots of Dog. A. M. Okelberry.—p. 1.

Developmental Pattern of Ectodermal Placodes in Rana Pipiens. R. A. Knouff, Columbus, Ohio.—p. 17.

Reaction of Cochlear Nerve to Destruction of Its End Organs: Study on Deaf Albino Cats. H. A. Howe, Baltimore.—p. 73.

Early Development of Human Diencephalon. Margaret Shea Gilbert, Ithaca, N. Y.—p. 81.

Optic Connections of Diencephalon and Midbrain of Cat. R. W. Barris, W. R. Ingram and S. W. Ranson, Chicago.—p. 117.

Nissl Granules of Autonomic Neurons. W. H. Hollinshead and S. L. Clark, Nashville, Tenn.—p. 155.

Brain Case and Endocranial Cast of Eryops Megacephalus (Cope). W. T. Dempster, Ann Arbor, Mich.—p. 171.

Central Nervous System of Oniscus (Isopoda). R. Walker, New Haven, Conn.—p. 197.

Topographic Analysis of Thalamus and Midbrain of Amblystoma. C. J. Herrick, Chicago.—p. 239.

Journal of Immunology, Baltimore

29: 87-174 (Aug.) 1935

Relationship Between Complement and Prothrombin. A. J. Quick, New York.—p. 87.

Response to Yellow Fever Virus in Nonsusceptible Rabbit. L. Whitman, New York.—p. 99.

Experiments on Reactivation of Virus in Neutral Serum-Virus Mixtures. R. K. Goyal, Edinburgh, Scotland.—p. 111.

Nonidentity of Jack Bean Agglutinin with Crystalline Urease. J. B. Sumner and S. F. Howell, New York.—p. 133.

*Antigenic Action of Cholesterol. A. Wadsworth, Elizabeth Maltaner and F. Maltaner, Albany, N. Y.—p. 135.

Further Note on Quantitative Determination of Fixation of Complement by Immune Serum and Antigen. Elizabeth Maltaner and F. Maltaner, Albany, N. Y.—p. 151.

Cytotoxic Principle in Anti-Euglena Rabbit Serum. Mary Elmore Sauer, Lawrence, Kan.—p. 157.

Studies on Venoms of North American Pit Vipers. T. S. Githens, Glenolden, Pa.—p. 165.

Antigenic Action of Cholesterol.—From seven of the ten rabbits inoculated with mixtures of cholesterol and swine serum, Wadsworth and the Maltaners obtained antiserums that reacted to a definite degree with a suspension of cholesterol as antigen in the usual form of complement fixation test. With special methods of comparative titration, these reactions differed from those of known specificity and also appeared similar to the nonspecific reactions of normal serum. In the reactions of known specificity that have been studied, the amount of complement fixed was directly proportional to the amount of immune serum used, whereas in the reaction of cholesterol and cholesterol antiserums it was not directly proportional—quite the contrary. Furthermore, reactions of known specificity were not appreciably affected when the concentration of serum constituents in the dilutions of serum tested was maintained constant by the use of normal serum instead of physiologic solution of sodium chloride as a diluent, whereas under similar conditions the reactions with cholesterol that were observed when dilutions were made with sodium chloride solution did not develop when normal serum was substituted. The reactions obtained with cholesterol and the serums of rabbits inoculated with cholesterol-swine-serum mixtures are apparently due to the effect on complement of the increased anticomplementary properties of these serums, together with fluctuations in the stability of the cholesterol suspensions occasioned by changes in the amount of protective serum colloids present in dilutions of the antiserums prepared with solution of sodium chloride. The comparative titrations of the activity of immune and normal serums, as evolved in these studies, provide a method for the analysis of serologic reactions, which has heretofore been lacking.

Journal of Pediatrics, St. Louis

7: 157-302 (Aug.) 1935

Neuroblastoma of Adrenal in Children. J. A. Askin and C. F. Geschickter, Baltimore.—p. 157.

Semen Allergy in Children. W. L. Cooper, Los Angeles.—p. 179.

Epiphyses in Rickets, Syphilis and Thyroid Deficiency. J. Signorelli, H. Hosen and J. M. Miles, New Orleans.—p. 182.

*Primary Peritonitis in Children. J. S. Leopold and F. Castrovinci, New York.—p. 187.

Simple Method of Transfusion for Infants and Children. M. L. Spivek, Chicago.—p. 199.

Determination of Insensible Water as Means of Calculating Heat Production over Weekly Period: Preliminary Report. J. L. Law, Ann Arbor, Mich.—p. 205.

*Case of Hepatonephromegalia Glycogenica—von Gierke's Glycogen Storage Disease. R. L. Wilder, Minneapolis.—p. 214.

Anemia of the New-Born and Erythroblastosis—Are They Inseparable? P. Cohen, New York.—p. 220.

Myasthenia Gravis in a Child: Observations on Effect of Ephedrine Therapy. W. E. Nelson, Cincinnati.—p. 231.

Effect of Tuberculin Test on Monocyte-Lymphocyte Ratio in Children. K. Kato, Chicago.—p. 238.

Primary Peritonitis in Children.—Leopold and Castrovinci report eleven cases of primary peritonitis (seven pneumococcic and four streptococcic) that occurred in female children between the ages of 2 and 10 years. Abdominal puncture was performed in three cases. Operation was performed in nine cases. The general mortality was 75 per cent. Two patients with pneumococcic peritonitis were operated on and recovered, and one patient with streptococcic peritonitis recovered without operation. The questions as to the portal of entry and as to the most favorable time for operation still remain unanswered. The clinical pathologic picture strongly suggests that the organisms enter the abdominal cavity at the ileocecal-appendical region. It is impossible to prove whether the organisms reach this site through the genital tract, through the intestinal tract, through the lymphatic system or by means of the vascular system. Abdominal puncture should be performed oftener in order to establish an early diagnosis. The objections against the use of this diagnostic measure may be classed as theoretical.

Glycogenic Hepatonephromegaly.—Wilder presents the case of a girl 3½ years old, in whom a diagnosis of glycogenic hepatonephromegaly as described by von Gierke seems most probable. This is based on the early onset of the enlarged abdomen (at 6 months), the absence of symptoms, the physical appearance of the child with Olympic brow, large head and trunk and relatively small limbs, the marked enlargement of the liver, the increased size of the roentgen shadow of the right kidney, the absence of enlargement of the spleen, the absence of ascites, the absence of a history of jaundice together with normal van den Bergh test, normal heart observations, the normal blood picture, the decreased water storage ability of the liver and the presence of acetonuria, which, although variable in single specimens, was constant in its daily occurrence. Although the epinephrine effect on the blood sugar level in this case was apparently normal, it seems possible that the underlying cause of disturbed carbohydrate metabolism may vary in different cases, so that the response to epinephrine might also vary. The present case raises the question of whether a similar clinical picture of hepatomegaly might result from disturbed carbohydrate metabolism as the result of internal hydrocephalus with pressure changes in the region of the hypothalamus and pituitary. Although there are no histologic data in this case on which the diagnosis of glycogen storage disease can be proved, the author believes that the evidence available justifies

placing the case of this child in this group. He states that further study on the pituitary relationship to glycogen storage disease seems to be indicated.

Journal of Pharmacology & Exper. Therap., Baltimore

54: 353-488 (Aug.) 1935

Antiseptic Action of Carbazole-3-Diazonium Chloride and Certain Other Diazonium Compounds, with Note on Preparation of Carbazole-3-Diazonium Chloride. C. H. Browning, R. Gulbransen and S. H. Tucker, Glasgow, Scotland.—p. 353.
Cesium Tetraiodophenolphthalein: New Salt for Gallbladder Visualization. J. Johnson and L. H. Hitzrot, Philadelphia.—p. 358.
Trypanocidal Action of Certain Styryl Selenazole Compounds. C. H. Browning, R. Gulbransen, Glasgow, Scotland, and W. McCartney.—p. 367.
Alcohol Injected Intravenously: Rate of Disappearance from Blood Stream in Man. H. W. Newman and W. C. Cutting, San Francisco.—p. 371.
Evaluation of Gonadotropic Hormone Preparations on Basis of Rat-Mouse Ratio Assay. W. O. Nelson and M. D. Overholser, Columbia, Mo.—p. 378.
Simple Method for Administration of Estrogenic Substances of Urine. A. Grollman, H. B. Shumacker Jr. and Evelyn Howard, Baltimore.—p. 393.
Pharmacologic Action of Ergotocin, a New Ergot Principle. M. E. Davis, F. L. Adair, Chicago; K. K. Chen and E. E. Swanson, Indianapolis.—p. 398.
Urinary Bladder Mechanisms. V. E. Henderson and M. H. Roepke, Toronto.—p. 408.
Cumulative Poisoning by Lanadigin, Ouabain and Digitoxin in Dogs. R. C. Li and H. B. Van Dyke, Peiping, China.—p. 415.
Effect of Various Anesthetics on Salivary Secretion. B. H. Robbins, Nashville, Tenn.—p. 426.
Studies on Reduction of Pitressin and Pitocin with Cysteine. R. R. Sealock and V. du Vigneaud, Washington, D. C.—p. 433.
Toxicity of Methyl Mercaptan for Fresh Water Fish. A. E. Cole, Madison, Wis.—p. 448.
Metabolic Response of White Rats to Continued Administration of Dinitrophenol. B. Terada and M. L. Tainter, San Francisco.—p. 454.
Contribution to Pharmacology of Nicotine. H. Gold and F. Brown, New York.—p. 463.

Journal of Thoracic Surgery, St. Louis

4: 547-660 (Aug.) 1935

*Putrid Abscess of Lung Following Dental Operations. L. Stern, New York.—p. 547.
*Symptomatology of Putrid Abscess of Lung. A. S. W. Touroff and S. E. Moolten, New York.—p. 558.
Clinically Significant Irregularities of Diaphragm. H. C. Ballon, Montreal.—p. 573.
Postpneumonic Atelectasis as Possible Cause of Chronic Empyema. E. F. Butler, New York.—p. 580.
*Experimental Total Pneumonectomy. J. J. Longacre, Cincinnati.—p. 587.
Open Intrapleural Pneumolysis Operation. R. Davison and F. I. Fremmel, Chicago.—p. 607.
Mortality of Empyema: Analysis of One Hundred Consecutive Deaths from Records of Charity Hospital in New Orleans. U. Maes, J. R. Veal and Elizabeth M. McFetridge, New Orleans.—p. 615.
Hernia of Lung: Report of Case, Outlining Mode of Fascia Lata Repair. A. H. Winkel, Seattle.—p. 627.
Experimental Observations on Effect of 95 Per Cent Oxygen on Absorption of Air from Body Tissues. J. Fine, S. Frehling and A. Starr, Boston.—p. 635.
Artificial Pneumothorax Treatment of Lobar Pneumonia. S. J. Shipman and F. Cox, San Francisco.—p. 643.
Application of Zipper Rubber Dam in Lobectomy. H. B. Stephens, San Francisco.—p. 646.

Abscess of Lung Following Dental Operations.—Stern states that twelve of seventy consecutive patients with pulmonary abscess gave histories strongly suggestive of causes traceable to dental operations. Pulmonary abscess may occur after tooth extraction without the aspiration of gross material, such as a tooth or filling. Gross aspiration did not occur in any of the cases. More cases followed the use of local than of general anesthesia. This is probably accounted for by the fact that today local anesthesia is the method of choice in dental surgery. Thorough investigation of the dental history in cases of abscess of the lung may reduce the percentage of cases formerly grouped as pulmonary abscess of unknown origin. Clinical and pathologic evidence point to aspiration as the usual mechanism in the production of putrid pulmonary abscess. The anesthesia and other factors associated with tooth extraction offer optimal conditions for the aspiration of infected particulate matter. There is evidence to suggest the association of a diminished or inactive reflex during dental operations with the occurrence of abscess of the lung. The prevention of pulmonary abscess following dental procedures may depend on the recognition and elimination of the hazards of aspirating infected particulate material dislodged during such procedures.

Symptomatology of Putrid Abscess of Lung.—Touroff and Moolten believe that putrid lung abscess is produced by infection of the lung with anaerobic micro-organisms aspirated from the mouth or the pharynx. In nearly half the cases no causative factors are known. The possible importance of badly diseased teeth and gums is suggested. The onset in typical cases of lung abscess is like that of acute bronchitis or grip, or a mild lobar pneumonia. The gangrenous nature of the underlying disease is revealed, only after an interval of time, by the appearance of blood in the sputum and the large amount of foul-smelling pus. In most cases this occurs by the end of the second week. The typical roentgenogram reveals a single pneumonic shadow with a central spherical cavity. The variation in width and density of the infiltration about the cavity is important as a guide to the behavior of the lesion. Spontaneous remission of some degree is usual during the primary stage of the disease. The only safe criterion of cure is disappearance of all symptoms and of the roentgenographic shadow completely. Relapse into a chronic progressive form of the disease is the rule in the majority of cases of lung abscess untreated during the primary stage. The chronic phase is usually definitely established in from three to four months. If untreated, this type of case has an average life expectancy of only three years. Fibrosis and bronchiectasis are the usual accompaniments of chronic lung abscess and may overshadow and obscure the original condition. Individual differences in symptoms of onset, pain, fetor, bleeding, clubbing, and degree of toxemia are of much importance in the evaluation of the type of case, its prognosis and indication for treatment, and in the diagnosis of complications. The onset and early course of putrid lung abscess in young children is often atypical or unrecognized. The foul odor of putrid abscess is distinguished from other foul odors by its pungent or acrid quality. Putrid superinfection of other diseases of the lung is rare. It is usually easy to differentiate from primary putrid lung abscess by means of the history. The location of chest pain generally indicates the site at which the abscess is most superficial. Bleeding is more common in lung abscess than in tuberculosis or carcinoma. Clubbing of digits appears earlier in lung abscess than in any other pulmonary disease and disappears only when all infection has subsided. The most important intrathoracic complication commonly encountered is putrid empyema or pyopneumothorax resulting from perforation of the abscess into the pleura. This may persist in chronic form.

Experimental Total Pneumonectomy.—Longacre is of the opinion that the ideal technic of pneumonectomy for the closure of the bronchial stump will be that method in which meticulous care is taken not only to prevent infection but also to minimize the trauma to the bronchus along with avoiding any disruption of the normal continuity of structures about the hilus. The technic as described by Willy Meyer meets most of these requirements but has, he believes, several distinct disadvantages. In the attempt to overcome these disadvantages, he made certain modifications and carried out his technic in thirty dogs. The technic requires the separate treatment of blood vessels along with an atraumatic division of the bronchus followed by the closure of the bronchial stump by means of inverting Cushing and mattress sutures. Considerable emphasis has been placed on the preservation of the blood supply to the peribronchial tissues. The sutures are introduced only through the peribronchial tissues, care being taken never to penetrate the bronchial lumen. The sutures are tied only tight enough to approximate and not to strangulate the tissues. By means of this technic the largest bronchial stump can be gradually, easily and completely closed. In many of the dogs the lung was removed because of a chronic experimentally produced lung abscess. Because of the high incidence of bronchial fistulas in earlier work in which the stumps were closed with catgut, the author decided to run two series (A and B) for which all details of technic would be the same except for the suture material. In series A (twelve dogs) in which twenty-day number 0 chromic catgut was used, the mortality rate was 75 per cent and the incidence of bronchial fistula was 66.6 per cent. In series B (eighteen dogs) in which fine and medium silk was used, the mortality was 16.6 per cent and the incidence of bronchial fistula

5.5 per cent. Histologic examination of the bronchial stumps at various stages of the healing process reveals marked inflammatory reaction to catgut buried in the peribronchial tissues, in sharp contrast to the slight reaction to the silk suture material. Silk is tolerated remarkably well in the peribronchial tissues, and vestiges are still present at the end of one year. It soon becomes encysted in a fibrous tissue capsule and so it remains, provided care has been taken to prevent its penetration into the bronchial lumen. The healing was in all cases brought about by the peribronchial tissues, although sluggish in contrast to other tissues. The author feels that the advantage of silk lies in the fact that it is less irritating to tissues and that its tensile strength is not easily affected, and, consequently, it holds the peribronchial tissues in apposition during the relatively long period required for the solid repair of the bronchial stump.

Medical Annals of District of Columbia, Washington

4: 185-208 (July) 1935

Incidence, Diagnosis and Treatment of Cancer of Stomach. J. S. Horsley, Richmond, Va.—p. 185.
Diagnosis and Treatment of Ocular Tuberculosis. W. H. Wilmer, Washington.—p. 191.
Clinical Features of Gonococcic Arthritis: Observations in Eighty-Five Cases. W. K. Myers and H. B. Gwynn, Washington.—p. 194.
Endometriosis: Report of Two Cases. J. F. Crowley, Washington.—p. 197.
Systematic Diagnosis of Anemias. J. Minor, Washington.—p. 200.

New England Journal of Medicine, Boston

213: 287-338 (Aug. 15) 1935

Volvulus of Cecum, Acute and Chronic, with Reports of Eight Cases. R. H. Sweet, Boston.—p. 287.
Subphrenic Abscess. R. H. Overholt and J. C. Donchess, Boston.—p. 294.
Use of Sodium Evipal as Anesthetic for Short Surgical Procedures. W. E. Garrey and R. B. Cohn, Boston.—p. 301.
Cyclopropane: New and Valuable Gas Anesthetic. L. F. Sise, P. D. Woodbridge and U. H. Eversole, Boston.—p. 303.
Management of Roentgen Sickness. G. W. Holmes and F. T. Hunter, Boston.—p. 308.
Vorhees Bag in Treatment of Placenta Praevia. M. V. Kappius, Boston.—p. 310.
Fracture of Epiphysis of Lesser Trochanter of Femur. S. M. Fitchet, Boston.—p. 313.
Medical Economics. N. B. Van Etten, New York.—p. 315.

Radiology, Syracuse, N. Y.

25: 131-260 (Aug.) 1935

X-Ray Diffraction Studies on Nerve. F. O. Schmitt, R. S. Bear, St. Louis, and G. L. Clark, Urbana, Ill.—p. 131.
Squamous Cell Carcinoma of Kidney: Report of Four Cases. B. H. Nichols, Cleveland.—p. 152.
Significance of Wedge-Shaped Deformity of Body of Vertebra. G. W. Grier, Pittsburgh.—p. 159.
Intensity and Dosage Near Radium Needles. G. C. Laurence, Ottawa, Ont.—p. 166.
*Distribution of Roentgen Radiation Within Average Female Pelvis for Different Physical Factors of Irradiation. A. N. Arneson and Edith H. Quimby, New York.—p. 182.
Relation of Air Ionization to Radiation Absorbed and Effect on Body Tissues. W. H. Meyer, New York.—p. 198.
Treatment of Advanced Malignant Disease. L. S. Auster, New York.—p. 207.
"Pied Forcé" or "Deutschländer's Disease." A. A. Zeitlin and I. N. Odessky, Moscow, U. S. S. R.—p. 215.
Relation Between Age and Radiosensitivity of Drosophila Eggs. C. Packard, New York.—p. 223.
Intravenous Urography in Injuries to Genito-Urinary Tract. W. J. Corcoran, Scranton, Pa.—p. 231.

Distribution of Roentgen Radiation Within Female Pelvis.—Arneson and Quimby state that a study of the various charts illustrating the percentage distribution of radiation in the pelvis for different methods of external irradiation reveals that certain procedures have definite advantages over others. The use of large single fields on the anterior and posterior pelvic surfaces delivers a greater dose to the bladder and rectal regions than to the cervix. Double small fields, half the size of the larger ones, can be used to irradiate an equal area of skin, to deliver the same depth dose and to spare the bladder and rectum from doses in excess of that reaching the cervix. The addition of lateral fields to any port arrangement increases the depth dose delivered at all points within the pelvis. The greatest improvement is in the parametrial regions, which, at a distance of 6 cm. from the midline, receive more radiation than the cervix. In view of these facts it seems that a six-port arrangement with a 70 cm. target-skin distance is the best of the methods for delivering roentgen radiation to patients with cervical cancer. No set rules can be established for the treatment of all patients. In most cases it is possible to irradiate the whole tumor-bearing region by the six-field technic. As far as the ratio between surface and depth dose is concerned, it makes no difference whether the radiation is administered at a single sitting or in several exposures. If a divided dose method is used, a greater total amount of radiation may be delivered to the skin and the total depth dose increased in the same ratio.

Southern Surgeon, Atlanta, Ga.

4: 227-296 (Aug.) 1935

Some Atypical Cases of Malignancy of Stomach. J. S. Horsley, Richmond, Va.—p. 227.
Spinal Anesthesia: Note on Evipal. W. F. Harper, Selma, Ala.—p. 240.
Tetanus and Its Treatment. Mims Gage and M. DeBakey, New Orleans.—p. 246.
Present Status of Wound Treatment. V. B. Philpot, Houston, Miss.—p. 260.
Diagnosis of Intracranial Tumors. C. H. Moore, Birmingham, Ala.—p. 266.
*Surgical Treatment of Angina Pectoris. T. C. Davison, Atlanta.—p. 274.
Management of Toxic Goiter. W. M. Scruggs, Charlotte, N. C.—p. 283.

Surgical Treatment of Angina Pectoris.—Davison points out that surgery has attempted to relieve the painful attacks of angina pectoris by cervical sympathectomy and by alcohol injection of the thoracic sympathetic ganglion. These procedures have proved somewhat dangerous and the results unsatisfactory. Subtotal thyroidectomy gave only temporary relief, as the basal metabolic rate was soon restored to normal and the anginal attacks recurred. Total thyroidectomy gives immediate and prolonged relief in the majority of cases, apparently because the lowered metabolism has decreased the demands on the heart. If the resultant myxedema becomes annoying, small doses of thyroid extract may be given, care being taken not to restore the metabolic rate to normal. The technic of total thyroidectomy is more difficult than that of the usual subtotal operation on account of the necessity of coming in direct contact with the recurrent laryngeal nerve and the parathyroid bodies. These structures are occasionally injured and a surgical tragedy may result. Of the fifty-four cases of Cutler, Mixter, Blumgart and Berlin and the author's there were only two deaths, a mortality surprisingly low considering the risks involved. The majority of the patients were relieved entirely of attacks, and others experienced greatly modified ones. Many have resumed their business activities under certain restrictions. Total thyroidectomy for the relief of angina pectoris is of too recent origin to give statistics as to longevity. The patients generally consider it a success.

Southwestern Medicine, Phoenix, Ariz.

19: 261-300 (Aug.) 1935

Treatment of Head Injuries. H. Fleming, San Francisco.—p. 261.
The San Diego Central Medical Service: Postpayment Plan of Medical Care for Low Income Groups. H. G. Holder, San Diego, Calif.—p. 264.
Prevention of Dental Disease. G. S. Millberry, San Francisco.—p. 272.
Curability of Tuberculosis of the Bowel. S. H. Watson and W. R. Hewitt, Tucson, Ariz.—p. 278.
Heat in Pelvic Inflammation: Description of Cheap, Efficient Apparatus. H. M. Purcell, Phoenix, Ariz.—p. 281.
Health Publicity in New Mexico Health District. Sally Lucas Jean.—p. 285.
Pertussis Bacilli in Etiology of Asthma and Bronchitis. J. M. Rawlings, El Paso, Texas.—p. 288.

West Virginia Medical Journal, Charleston

31: 341-388 (Aug.) 1935

Uterine Hemorrhage. I. Abell, Louisville, Ky.—p. 341.
Conservatism in Pelvic Surgery. T. E. Vass, Bluefield.—p. 349.
Few Points in Connection with Lighting and Seeing. J. E. Blaydes, Bluefield.—p. 352.
Report of Study of Lighting in Schools in Fayette County, West Virginia. G. Fordham, Powellton.—p. 357.
Obstetric Injuries to the Birth Canal. E. J. Humphrey, Huntington.—p. 359
Traumatic Rupture of the Spleen: Report of Case Showing Delayed Rupture with Operation and Recovery. W. Bronaugh, Belpre, Ohio.—p. 363.
Rôle of Civilian Physician in Program for National Defense. W. M. Sheppe, Wheeling.—p. 367.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

10: 211-336 (Aug.) 1935

Infantile Scurvy: Its History. G. F. Still.—p. 211.
Dr. Cheadle and Infantile Scurvy. F. J. Poynton.—p. 219.
Cases Described as "Acute Rickets" Which Are Probably a Combination of Scurvy and Rickets, the Scurvy Being an Essential and the Rickets a Variable Element. T. Barlow.—p. 223.
Isolation and Identification of Vitamin C. S. S. Zilva.—p. 253.
Recognition of Scurvy, with Especial Reference to Early X-Ray Changes. E. A. Park, Harriet G. Guild, Deborah Jackson and Marian Bond.—p. 265.
Vitamin C and Its Effects on Structure of Teeth. A. T. Pitts.—p. 295.
Malnutrition and Latent Scurvy. T. Frölich.—p. 309.
Vitamin C Content of Liver of New-Born Infants. K. U. Toverud.—p. 313.
Investigations into Pathogenesis of Scorbutic Dystrophy. P. Rohmer and N. Bezssonoff.—p. 319.
Studies in Anemia of Infancy and Early Childhood: Part X. The Anemia of Infantile Scurvy. L. G. Parsons and W. C. Smallwood.—p. 327.

British Journal of Experimental Pathology, London

16: 349-434 (Aug.) 1935

Spectrophotometric Determination of Blood Cholesterol by Means of Oxide of Silica. H. Foy and Athena Kondi.—p. 349.
Complement Fixation with Vaccinial Elementary Body Suspensions and Antivaccinial Rabbit Serum. M. H. Finlayson.—p. 358.
*Plasma Phosphatase in Various Types of Jaundice. Freda K. Herbert.—p. 365.
Phagocytosis of Bacillus Typhosus in Relation to Its Antigenic Structure and to Antibody Components of Sensitizing Serum. S. S. Bhatnagar.—p. 375.
Relative Pathogenicity for Rabbit of Gravis, Mitis and Intermediate Strains of Corynebacterium Diphtheriae. J. F. Murray.—p. 384.
Internal Structure of Bacterial Cells. K. B. Merling-Eisenberg.—p. 388.
Prophylaxis of Experimental Vibrion Septique Infection and Practical Application of Antibacterial Methods. D. W. Henderson.—p. 393.
Inactivation of the H Antigen by Dilute Mineral Acid. J. T. Duncan.—p. 405.
Observations on Life Cycle of Pleuropneumonia Virus. K. B. Merling-Eisenberg.—p. 411.
Adsorption and Elution of Rous Sarcoma Agent. E. M. Fraenkel and C. A. Mawson.—p. 416.
*Further Observations on Properties of Vi Antigen of Bacillus Typhosus and Its Corresponding Antibody. A. Felix and S. S. Bhatnagar.—p. 422.

Plasma Phosphatase in Various Types of Jaundice.—Using the method of Jenner and Kay for phosphatase estimation, Herbert found that in jaundice due to gross mechanical obstruction of the bile ducts the plasma phosphatase is always above normal and usually markedly raised. In jaundice due to toxic or infective disease of the liver, the plasma phosphatase is in many cases normal and in others usually only slightly raised, though occasional high figures occur. In hemolytic jaundice the plasma phosphatase is normal or shows no significant increase. The diagnostic value of the test is limited by the fact that moderate rises in plasma phosphatase may occur both in jaundice due to mechanical obstruction and in toxic or infective jaundice. The estimation of phosphatase may give assistance in diagnosis in some cases. The figures for phosphatase and directly reacting bilirubin in the plasma do not run parallel. It may be possible, however, to explain phosphatase retention as due to biliary obstruction without any alteration in the accepted interpretation of the van den Bergh reaction.

Properties of Vi Antigen of Bacillus Typhosus.—Felix and Bhatnagar state that the Vi antibody produced by immunization with suspensions of virulent strains of Bacillus typhosus in the living state exerts a powerful phagocytosis-promoting action on strains containing Vi antigen, while it is without any effect on strains devoid of this antigen. The Vi antibody excels the O antibody in the phagocytosis-promoting function in the same way as it does in the protective action against attack by strains of high virulence. There is a summation effect in the sensitizing activities of Vi and O antibodies and their respective modes of action seem to be essentially similar, since both depend on the active participation of complement. The Vi antibody elaborated in response to immunization with formolized Vi antigen is not identical with that resulting from immunization with the "natural" Vi antigen contained in the living virulent bacilli. The phagocytosis-promoting activity and the protective power of the former are much inferior to those of the latter, though there is no difference in the agglutinating properties of the two varieties of antibody. The "functional deficiency" of the altered Vi antibody is discussed, and the apparent analogy to the relationship existing between haptens and antigens is tentatively considered. The extreme susceptibility to phenol of the Vi antigen of Bacillus typhosus is demonstrated. The necessity of using the "natural" Vi antigen from live bacilli for the preparation of therapeutic antityphoid serum of high potency is emphasized. The possible application of these facts to other bacterial species is suggested.

Indian Journal of Medical Research, Calcutta

23: 1-316 (July) 1935

Anteriovenous Sugar Difference in Diabetes Mellitus: Its Value in Adjudging Severity of Disease. J. P. Bose.—p. 1.
Endemicity of Plague in Mysore State: Part I. J. V. Karve and E. R. Sundararajan.—p. 21.
Comparative Results of Bacteriologic Examination of Madras Waters at Source and After Transport to Distant Laboratory. W. J. Webster and T. N. S. Raghavachari.—p. 57.
*Histopathology of Liver in Infantile Biliary Cirrhosis. M. V. Radhakrishna Rao.—p. 69.
Toxicity Tests of Novarsenobenzene in White Mice Bred in India. J. Taylor and M. L. Ahuja.—p. 91.
*Serologic Relationships of Certain Vibrios Isolated from Noncholera Sources in India. J. Taylor and M. L. Ahuja.—p. 95.
Observations on Neutralization of Hemorrhagin of Certain Viper Venoms by Antivenene. J. Taylor and S. M. K. Mallick.—p. 121.
Coagulant Action on Blood of Daboia and Echis Venoms and Its Neutralization. J. Taylor, S. M. K. Mallick and M. L. Ahuja.—p. 131.
Observations on Poisoning with Venom of Echis Carinata and Its Treatment with Heterologous Antivenene. J. Taylor and S. M. K. Mallick.—p. 141.
Short Note on Use of Glycerinated Medium in Technic of Single Cell Isolation of Bacteria. R. Sanjiva Rao.—p. 147.
Cancer in India. Vishwa Nath and K. S. Grewal.—p. 149.
Motor Functions of Bowel in Avitaminosis B and in Starved Animals. D. D. Chatterjee.—p. 191.
Description of Adult Filaria (Male) Removed from Anterior Chamber of Eye of Man. R. E. Wright, P. V. Seetharama Iyer and C. G. Pandit.—p. 199.
Probable Trend of Population Growth in India. K. C. K. E. Raja.—p. 205.
Simple Form of Electrodialyser. G. Sankaran.—p. 219.
Molecular Formula of Thyroglobulin. G. Sankaran and M. Patnaik.—p. 223.
Influence of Cereals on Calcium, Magnesium and Phosphorus Assimilation: Preliminary Note. S. Ranganathan.—p. 229.
Spectrographic Examination of Urinary and Biliary Calculi. S. Ranganathan and N. K. De.—p. 237.
Vitamin C Content of Some Indian Foodstuffs. S. Ranganathan.—p. 239.
Contributions to Protozoal Immunity: Part III. Rôle of Electrical Charge in Phagocytosis of Red Cells. K. V. Krishnan, R. N. Chopra and S. N. Mukherjee.—p. 253.
Pharmacologic Action of Tylophorine: Alkaloid Occurring in Tylophora Asthmaticus. R. N. Chopra, N. N. De and M. Chakerburty.—p. 263.
Probable Vector of Oriental Sore in Punjab. H. E. Shortt, J. A. Sinton and C. S. Swaminath.—p. 271.
Note on Some Experiments with Sandfly Fever Blood and Serum. H. E. Shortt, L. T. Poole and E. D. Stephens.—p. 279.
Adsorption of Antigens by Antibodies or Vice Versa: Part I. Theoretical. B. N. Ghosh.—p. 285.
Hematologic Studies in Indians: Part II. Normal Standards for Bengal Town Population. L. E. Napier and C. R. Das Gupta.—p. 305.
Id.: Part III. Normal Standards for Tea Garden Coolie Population. L. E. Napier and C. R. Das Gupta.—p. 311.

Microscopic Changes in Liver in Infantile Biliary Cirrhosis.—Radhakrishna Rao studied the microscopic changes in the liver in five cases of infantile biliary cirrhosis by the application of different staining methods, including the silver impregnation of the reticulum. He emphasizes the following histopathologic features: (1) varying degrees of necrosis of the liver cells, almost uniformly distributed throughout the organ; (2) an avascular, noninflammatory, edematous connective tissue network enclosing in its meshes small islands of hepatic parenchyma of very unequal sizes and in varying degrees of degeneration; (3) an obliterative lesion of the terminal and some of the bigger divisions of the hepatic venous tree without appreciable changes in the portal venous and biliary trees; (4) areas showing disorganization of the reticulum of the sinusoidal capillary bed mostly round the hepatic venous terminals, and (5) poor attempts at regeneration of the hepatic parenchyma as evidenced by the small size of the rounded nodules of liver

cells distributed throughout the organ. The genesis of the fibrous tissue in the liver is traced to an atrophy and degeneration of the parenchymal mantle round the hepatic venous tree and collapse, condensation and sclerosis of the reticular framework of the corresponding sinusoidal capillary bed. The pathologic changes in the liver in the present series of cases were similar to those described in toxic cirrhosis. But, because of the fine pseudolobulation and the coexistence of the necrotic lesions with regenerative changes in the hepatic parenchyma, it is suggested that the etiologic noxa is probably of a subacute nature. Whatever might be the exact nature of the toxin responsible primarily for the lesions of the hepatic vein and secondarily for the parenchymal loss, its action is not acute, but probably subacute atrophy and necrosis of the hepatic parenchyma and the resulting cirrhosis (residual fibrosis) can be determined only by a further clinical investigation. The condition in the liver is shown to be one of subacute toxic cirrhosis in the four cases and mixed cirrhosis—subacute toxic cirrhosis with cholangeitis—in the fifth case. The genesis and function of the so-called bile ducts (pseudobile canaliculi) seen in the connective tissue network, the mechanism of ascites and the production of icteric necrosis and bile thrombi are discussed.

Serologic Relationships of Certain Vibrios.—Taylor and Ahuja found agglutinable vibrios isolated from healthy persons in an endemic cholera area in Bengal to be serologically indistinguishable from an authentic vibrio strain maintained in subculture, when examined by both qualitative and quantitative methods. Two such vibrios, differing from each other in their chemical structure, have given the same serologic reactions as an authentic cholera vibrio of the type commonly encountered in India, which differs in chemical structure from either of them. A vibrio, isolated from water in an area widely removed from places in which cholera is endemic and which had been free from cholera for a number of years, was inagglutinable when first received, but in a period of six months of subculture developed all the biologic characters of an authentic cholera vibrio, including H and O agglutination to full titer, and was indistinguishable from a cholera strain when quantitative tests were applied. This strain differed in chemical structure from the cholera strain with which it was compared and from the agglutinable carrier vibrios. Vibrios possessing five different types of chemical structure, as shown by the nature of their protein and carbohydrate fractions, have given identical serologic and biochemical reactions. Serologic methods of examination alone fail to show definite differences that may exist in vibrios. The epidemiologic significance of vibrios that are agglutinable with cholera high titer serum but at the same time differ in chemical constitution from Vibrio cholerae of the type commonly isolated from cholera cases in India has not been determined. A series of inagglutinable vibrios isolated from healthy persons in the same endemic cholera area have not been found to fall into any consistent serologic group or to show relationship with inagglutinable vibrios from other sources. One strain of this group, although inagglutinable, was agglutinogenic for cholera strains and for the agglutinable vibrios isolated in the area. This agglutination was in relation to the heat-labile fraction only and may suggest a group relationship to these vibrios.

Journal of Physiology, London

85: 1-116 (Aug. 22) 1935

Pharmacologic Estimation of Adenosine and Histamine in Blood. G. S. Barsoum and J. H. Gaddum.—p. 1.
Some Observations on Salivary Secretion. W. Feldberg and J. A. Guimarãis.—p. 15.
Effect of Pituitary (Posterior Lobe) Extract on Urinary Flow in Non-anesthetized Dogs. A. Samaan.—p. 37.
Explanation of Increase in Systemic Flow Caused by Occluding Descending Thoracic Aorta. H. Barcroft and A. Samaan.—p. 47.
Further Observations on Respiratory-Accelerator Fibers of Vagus. M. Hammouda and W. H. Wilson.—p. 62.
Intermittent Conduction in Spinal Cord. D. H. Barron and B. H. C. Matthews.—p. 73.
"Recurrent Fibers" of Dorsal Roots. D. H. Barron and B. H. C. Matthews.—p. 104.
*Influence of Calcium on Intestinal Absorption. E. J. McDougall.—p. 109.

Influence of Calcium on Intestinal Absorption.—McDougall studied the influence of calcium on the permeability of the intestine and also by decreasing the blood calcium by feeding, not by extirpation of the parathyroids together with the thyroids, the absorption both of sugars which are known to be absorbed by a selective process (dextrose) and of those which are absorbed by diffusion only (xylose and sorbose). The influence of calcium was therefore tested both on the synthetic process and on the pure diffusion process. It was found that rats reared on a diet which caused low serum calcium absorbed isotonic solutions of dextrose, xylose and sorbose at the same rate as normal rats, when these sugars were injected directly into the small intestine in urethanized animals.

Journal of State Medicine, London

43: 435-496 (Aug.) 1935

Limits of Antenatal Care. A. W. Bourne.—p. 435.
Antenatal Care of Teeth. T. T. Read.—p. 445
Economic Aspects of Spa Treatment. W. Edgecombe.—p. 449.
Source of Natural Mineral Waters. A. Woodmansey.—p. 467.
The Secret of the Spas. F. H. Humphris.—p. 473.
Some Social Aspects of Housing and Rehousing. M. R. Baskett.—p. 489.

Journal of Tropical Medicine and Hygiene, London

38: 197-212 (Aug. 15) 1935

Reaction of Organisms on Arbutin Agar. A. Castellani and M. Douglas.—p. 197.
Ulcer Syndrome in Tropical Africa. A. A. F. Brown.—p. 201.

Lancet, London

2: 287-354 (Aug. 10) 1935

Pruritus. Horder.—p. 287.
*Cod Liver Oil Treatment of Wounds. J. P. Steel.—p. 290.
Neurosis and Unemployment. A. Lewis.—p. 293.
Some Interrelations Between Water and Fat Metabolism in Relation to Disturbed Liver Function H. Selye, J. B. Collip and D. L. Thomson.—p. 297.
Colostomy and Its Inherent Difficulties: Suggested Operative Technic. T. Warwick.—p. 298.

Cod Liver Oil Treatment of Wounds.—Steel has obtained good results with cod liver oil in the treatment of burns. Lint heavily soaked in cod liver oil was applied widely over the part to be treated and covered with a dressing. The dressing is left in place and resoaked with cod liver oil every twenty-four hours, the lint not being taken from the skin surface until the end of forty-eight hours—an obvious advantage when the area to be treated is large. When cases have not reacted previously to the ordinary dressings, it has been found that cod liver oil hastens recovery, and the speed with which an indolent area is transformed into one of healthy granulation is remarkable. Almost every patient has said that the first application of cod liver oil has given much greater ease than other dressings. The author also used crude cod liver oil as a dressing in indolent ulcers and deep abrasions, but always following the rule "if there is pus, it must be let out." It has been found of advantage in a great number of slow healing areas. After the removal of pus or gangrenous patches of skin, oil applied in the way described has induced rapid granulation of tissue previously indolent in leg ulcers and even in fistulas. One patient having a fistula had been in the hospital for thirty-four days under routine treatment and still showed a slight serous discharge. After the wound was packed for six days with cod liver oil, the patient was able to leave the hospital and needed to make only two outpatient attendances for the renewal of the dry dressings.

Medical Journal of Australia, Sydney

2: 133-166 (Aug. 3) 1935

Agranulocytosis. A. S. Walker.—p. 133.
Establishment of "Mossman," "Coastal" and Other Previously Unclassified Fevers of North Queensland as Endemic Typhus. A. M. Langan and R. Y. Mathew.—p. 145.

2: 167-198 (Aug. 10) 1935

Sleep and Sleeplessness. H. M. North.—p. 167.
Insomnia Due to Physical Causes. G. C. Willcocks.—p. 170.
Surgical Anuria. R. G. S. Harris.—p. 173.
Congenital Clubfoot. H. A. Sweetapple.—p. 176.
Growth Curve of Australian Infants During First Year of Age. II: Comparison—North Queensland, Tasmania and New South Wales. F. W. Clements.—p. 182.

Annales de Médecine, Paris

38: 117-212 (July) 1935

Treatment of Hyperthyroidism by Roentgen Rays. M. Labbé and E. Azérad.—p. 117.
*Uremic Dechloridation Gastro-Enteritis. P. Merklen and H. Gounelle. —p. 154.
New Studies on Lesions of His-Tawara Bundle: Left Branch Block and Its Pathogenesis. I. Mahaim.—p. 185.

Uremic Dechloridation Gastro-Enteritis.—Merklen and Gounelle observed seven patients with acute uremic dechloridation gastro-enteritis. The first was too old to be effectively rechloridized but served to emphasize the satisfactory effects of salt in the following five cases. Administration of salt in these resulted in marked clinical improvement and restoration of the chloride reserve. The use of salt in certain vomitings of pregnancy seems especially promising, but its method of use is not yet certain.

Presse Médicale, Paris

43: 1217-1232 (July 31) 1935

*Carotid Sinus Denervation. R. Leriche, R. Fontaine and F. Froehlich. —p. 1217.
Sympathetic Operations in Severe Asthma. H. Godard.—p. 1220.

Carotid Sinus Denervation.—Leriche and his co-workers made bilateral denervations of the carotid sinus in twenty-six dogs. The operations were performed in one or two stages and the animals were given either morphine or general anesthesia. In most of the animals the denervation was performed by a slow and minute dissection of all the nervous elements reaching the carotid bifurcation. In the majority the ablation of the carotid body was verified histologically. In all animals the arterial pressure was recorded before, during and after the operation. In two dogs electrocardiograms were taken. None of the dogs died as the result of the procedure. The immediate result of unilateral denervation was a slight arterial hypertension. This was accentuated after bilateral denervation. Experimentally, no important sequels resulted from this operation. Seven patients have been operated on, five for bilateral and two for unilateral denervation. In man, the denudation, the pulling and especially the injection of procaine hydrochloride around the carotid sinus cause an instantaneous increase of arterial pressure which returns gradually to nearly the previous level. The procedure apparently causes, therefore, no important changes experimentally or clinically in blood pressure, cardiac rhythm or respiration. The operation seems to be indicated, first, in the conditions in which it is desirable to increase the cerebral and ocular circulation and, secondly, when it is advisable to raise the general arterial pressure.

43: 1249-1264 (Aug. 7) 1935

*Spontaneous Gastroduodenal Fistulas. P. Moiroud.—p. 1249.
*Roentgen Therapy of Inflammatory Disorders. I. Solomon and P. Gibert.—p. 1251.
Liberation of Pleural Adhesions. O.-M. Mistal.—p. 1253.

Spontaneous Gastroduodenal Fistulas.—Moiroud describes the case of a woman, aged 81, who developed a spontaneous gastroduodenal fistula from a benign ulcer of the lesser curvature. The roentgenogram was verified by necropsy. He also discusses three similar observations made by others. As a result he believes that it is possible to list the changes manifested by roentgen examination. These are gastric filling following the lesser curvature, notching of the greater curvature, the presence of a gastric bottom with prolonged stasis and a visible black line leading directly from the lesser curvature toward the duodenum. The question of a definite clinical picture resulting from a fistula thus established is still uncertain.

Roentgen Therapy of Inflammatory Disorders.—Solomon and Gibert discuss the treatment of inflammatory conditions by roentgen rays. Treatment is possible with the simplest kind of machine. The more acute the process the weaker the dose advisable. Their experience showed that the optimal dose lies between 100 and 200 roentgens. The field of irradiation should be much wider than the inflammatory zone. The frequency is variable. Such treatment gives good or promising results in many superficial skin diseases, in acute inflammations of the mouth, of the pharynx or sinus and of the female genital organs, in anorectal disorders and in some disorders of the nervous system. Whatever the explanation of the favorable results observed, this treatment is full of promise for the future.

Schweizerische medizinische Wochenschrift, Basel

65: 805-844 (Aug. 31) 1935. Partial Index

Position of Physical Therapy in General Medicine and Tasks of Physical Therapeutic Research. K. von Neergaard.—p. 805.
Estimation of Sympathetic Neuroses in Practice. B. Rocco.—p. 808.
*Poisoning with Nitrite. E. Rüegg.—p. 809.
Acute Gastritis During Childhood. W. Rütimeyer.—p. 811.
Recurrence of Acute Infectious Diseases During Childhood. P. Ryhiner. —p. 813.
Late Fatalities After Diabetic Coma with Aspects of Progressive Adynamia. H. Scholer.—p. 814.
*Aspects of Unusual Forms and Possibilities of Infection in Erysipeloid. A. Schüler.—p. 817.

Poisoning with Nitrite.—Rüegg observed three cases of nitrite poisoning in the members of one family (father, mother and daughter). The symptoms developed immediately after they ate a meal that had been seasoned with nitrite, which had been mistaken for ordinary salt. Vomiting and diarrhea developed and stupor and unconsciousness followed. The patients were not discovered until several hours later. All recovered. The author discusses the pharmacology of nitrites, calling attention to the formation of nitrous acid in the stomach with subsequent irritation of the gastric and intestinal mucous membrane, the vascular dilatation, the paralyzing action on the vasomotor center, the narcotic action and other effects. He thinks that the fatal outcome of nitrite poisoning is primarily the result of the transformation of the blood pigment into methemoglobin. In discussing treatment, he says that gastric lavage should be done at once, to prevent resorption of the poison. Then 10 Gm. of animal charcoal in from 100 to 200 cc. of water should be given several times, and finally 10 Gm. of sodium sulphate or castor oil may be administered. Some of the poison can be removed by venesection and infusion. Blood transfusion is effective, because it supplies normal hemoglobin. Oxygen inhalation is advisable in order to utilize the patient's own normal hemoglobin. The vascular paralysis is counteracted by stimulating the vasomotor center. The respiratory center should likewise be stimulated. The stimulants used for these purposes, as a rule, also stimulate the cardiac action. The use of caffeine should be avoided, because of its vasodilatory effect. The author also mentions sodium thiosulphate, guaiacol and Berlin blue, the injection of which proved effective in poisoning experiments in animals.

Infection in Erysipeloid.—Schüler gives the history of a man, aged 36, who was stung by an insect on the lower part of the left leg. On the following day fever developed and the area of the sting became edematous with a bluish discoloration. Under treatment the symptoms disappeared. However, several weeks later there was a recurrence of the symptoms with fever. The symptoms in the leg gave the impression of an atypical erysipelas. The attack subsided, but there were several relapses at intervals of several weeks. It was finally decided that the disorder was not erysipelas but erysipeloid. In the course of a renewed attack erysipelas serum was injected around the involved areas on the leg and this was followed by immediate improvement. Nevertheless, there was a renewed attack in the course of which serum was administered once more. A period of well being lasting several weeks was followed by an attack of chills, high fever, painful swelling of the inguinal glands, nausea and pains in the joints, the back and the head. Suddenly extremely severe pains developed in the epigastric region and perforation of the stomach was considered. However, the pains subsided again as did also the glandular swellings. Subsequently the patient was given repeated injections of erysipelas serum, but there was another recurrence months later. In spite of the fact that the diagnosis was not corroborated by bacteriologic tests, the author is inclined to believe that the condition was an erysipeloid, pointing out that lymphangitis, lymphadenitis and pains in the joints are occasionally observed in erysipeloid, and he thinks that the favorable response to erysipelas serum is likewise a corroboration of this diagnosis. The question as to whether the peculiar abdominal symptoms were related to the erysipeloid is answered in the affirmative. In trying to explain the relationship, the

author rejects the possibility of a true septicemia. He assumes an irritation by a slightly virulent bacterial metastasis or by toxins that have reached the circulation. The localization seems to contraindicate an erysipeloid, for this condition develops generally on the fingers and hands. Moreover, transmission of the virus by insect bites is rather rare, but the author cites the case of another observer, which was caused in this manner. The author says that, although the majority of cases recover with symptomatic treatment, many authors consider serum therapy the best.

Riforma Medica, Naples

51: 1273-1308 (Aug. 24) 1935

*Intravenous Streptococcus Vaccine Therapy in Rheumatic Conditions. F. Corelli.—p. 1275.

Serologic Changes in Paroxystic Hemoglobinuria Due to Exposure to Cold. G. D'Alessandro.—p. 1280.

Ligation of Lingual Artery at Pirogoff's Angle in Different Periods of Life. F. Bellelli.—p. 1285.

Streptococcus Vaccine in Rheumatic Conditions.—Corelli administered streptococcus vaccine intravenously to twenty patients presenting acute, subacute and chronic articular rheumatism, chorea, sciatic neurodocitis, rheumatic polyneuritis and periviscerítis. The vaccine was produced from streptococcus strains cultivated from the blood and from the articular exudate of a patient having acute articular rheumatism. The initial dose in all cases was three million organisms per cubic centimeter of a 0.5 per cent phenicated physiologic solution. Increase of dosage depended on the individual reaction of the patients. Injections were generally given every four or five days. When a favorable reaction set in, the dose was decreased. The majority of patients responded well to treatment. The best results were observed in cases of subacute articular rheumatism. In four of six patients there was constant diminution and disappearance of pain and of articular swelling, increase of movements and disappearance of fever. These were also observed in a case of chronic articular rheumatism that resisted other treatment. In nervous cases, such as in chorea and rheumatic polyneuritis, good results were obtained by combining vaccine therapy with salicylate treatment. In a case of periviscerítis, the temperature disappeared and the abdominal pains diminished after only four injections. The author does not attribute the primary etiologic importance to the streptococci cultivated from the blood and the articular exudate. He maintains that this treatment is not specific but essentially a treatment of stimulation.

Semana Médica, Buenos Aires

42: 521-596 (Aug. 22) 1935. Partial Index

*Zárate's Symphysiotomy in Relative Osseous Dystocia. N. Palacios Costa and M. V. Falsía.—p. 521.

Myorrhythmia of Eyes, Larynx, Pharynx and Velum Palatinum in Protuberential Syndrome: Case. J. C. Montanaro and J. L. Hanón.—p. 537.

Juvenile Diabetes in Persons Between the Ages of Fifteen and Twenty-Five. F. Puchulu.—p. 548.

*Chemical Test in Diagnosis of Pregnancy. R. A. Ferrari and D. J. Francis.—p. 555.

*Treatment of Leprosy by Fish Oils.—O. Calcagno.—p. 557.

Symphysiotomy in Relative Osseous Dystocia.—Palacios Costa and Falsía state that symphysiotomy, according to Zárate's technic, is absolutely indicated in relative pelvic dystocia, that is, disproportion between the pelvis of the mother and the head of the fetus, when uncomplicated by other dystocia and providing that the uterine dynamics are efficient. Symphysiotomy is indicated also in the following complications of labor: narrow pelvis in primiparas or in multiparas after a period of expectancy called the "test of delivery" in which the inability of the head of the fetus to pass through the pelvis is proved, in fetal suffering with a living fetus, in amniotic infection during labor, in lack of dilation of the cervix (complemented in this case by manual dilation of the cervix or by some simple incision in it), in deflected cephalic presentations, especially forehead and face presentations, and finally in retention of the head after delivery of the body. Out of a group of 1,969 pregnant women seen in the maternity department of the Rawson Hospital during 1934, 132 had a defective pelvis. Symphysiotomy was performed on fourteen of this group—twelve multiparas and two primiparas. Spontaneous delivery followed in each case. Small incisions of the cervix were made only in one. In a few cases the dynamics of the uterus were reinforced by the administration of a pituitary preparation, or the Kristeller method of expression of the fetus from the uterus was resorted to. There were no fatalities in this group. Women with a narrow pelvis and an obstetric conjugate diameter of the pelvis larger than 8.3 cm. had spontaneous deliveries after the "test of delivery." Symphysiotomy was used to deliver women with an obstetric conjugate diameter of the pelvis larger than 7.8, but smaller than 8.3 cm.

Chemical Test in Diagnosis of Pregnancy.—Ferrari and Francis used the Kapeller-Adler test for the diagnosis of pregnancy on 263 women in different stages of pregnancy and on twenty normal women as controls. The test is based on the detection of histidine in the urine of pregnant women by treating it with a 1 per cent solution of bromine in a 33 per cent solution of acetic acid and then by a mixture of two parts of ammonia with one part of a 10 per cent solution of ammonium carbonate. The technic and results of the test appeared in the *Wiener klinische Wochenschrift*, abstracted in THE JOURNAL, April 14, 1934, page 1265. In the group of nonpregnant women the test gave positive results in two cases and negative results in eighteen (10 per cent of error). In the group of pregnant women the greater percentage of error was obtained in cases of early pregnancy—during the first four or five weeks. In all cases the Friedman test, used to check up the results of the histidine test, gave positive results. The histidine test gives the best results in women who are in the fourth or fifth month of pregnancy, and the sensitivity of the test decreases as pregnancy advances. The authors believe that it is probable that the elimination of histidine in pregnancy, which has been calculated as fluctuating between 6 and 74 mg. per hundred cubic centimeters of urine, varies in the different months of pregnancy because of certain unknown biochemical factors. The authors' results, which do not agree with those of the originator of the technic, lead them to conclude that the test is not sensitive enough and that its use is not advisable in the diagnosis of pregnancy, especially in early pregnancy, unless the originator modifies his technic.

Treatment of Leprosy by Fish Oils.—Calcagno made a chemical study of the oil of Salminus brevidens as well as of that of Prochilodus platensis and Pimelodus clarias. When the fatty acids from the oils are distilled between 193 and 210 C., the ethyl esters obtained are not as active as the oils themselves. It is possible that, when they are distilled at higher temperatures, dextrorotatory esters of higher boiling points and greater activity may be obtained. The oils of these fish and their ethyl esters can be used without distinction in the treatment of leprosy because their chemical composition is about the same. The oils may be washed in alcohol. When they are to be used in injections, it is advisable not to wash them, because their fatty acids would be washed away, which may result in a diminution of their therapeutic properties. A series of preparations, such as those made with chaulmoogra oil, was made by the author with the fish oils as well as with their ethyl esters, fatty acids, oil in sodium salt solutions and emulsions. The author advises their clinical application in verifying the therapeutic value of the oils and their derivatives in leprosy.

Archiv für Kinderheilkunde, Stuttgart

106: 1-64 (Aug. 13) 1935

*Local Lipomatosis Following Insulin Injections. R. Priesel.—p. 1.

Congenital Atresia of Pancreatic Duct and Hypertrophy of Islands of Langerhans: Diagnosis of Pancreatic Disturbances. W. Tiling.—p. 9.

Significance of Demonstration of Tubercle Bacilli in Secretion of Fasting Stomach. Edith Krüger.—p. 16.

Studies on Dysentery: Carbohydrate Metabolism. L. von Kostyál and Marie D. Weinrich.—p. 21.

*Cutaneous Vaccinations with Influenza Bacilli. Z. Teveli.—p. 27.

*Irradiation of Hydrocephalus. E. von Lederer.—p. 31.

Electrocardiogram of Cardiac Disturbances that Develop in Children During Typhoid. P. von Kiss and B. Wollek.—p. 38.

Local Lipomatosis Following Insulin Injections.—Priesel reviews the literature on local lipomatosis after insulin injections and then describes his own observations on a boy, aged 8, who had received insulin treatments for the last four years and who died in diabetic coma. In this boy indolent

swellings had developed at all sites of insulin injection. A necropsy was made and the pancreas, the liver, the kidneys, the heart, the parathyroids and particularly the cushion-like proliferations of the subcutaneous fat tissues at the sites of injection were subjected to histologic examination. The author says that the cause of the local lipomatosis is unknown, just as is the cause of the localized lipodystrophy that has been observed after insulin therapy. He admits that these two conditions have even been observed in the same person. He cites reports indicating that in children lipomatosis is somewhat more frequent than lipodystrophy. It appears to be a tendency of the young organism to react with fat proliferation. Frequent changing of the sites of injection may prevent the development of the lipomatosis in predisposed persons. Once the lipomas have developed, a partial regression may be expected by avoiding for a time renewed injections into the proliferated portions. The tricresol addition to insulin, which has been considered the cause of lipodystrophy, cannot be held responsible for the lipomatosis, since the latter has been observed in cases in which the insulin did not contain this addition.

Cutaneous Vaccinations with Influenza Bacilli.—Teveli shows that, whereas there is general agreement regarding the value and nature of the tuberculin, Schick and Dick reactions, opinions are still divided in regard to skin tests with other bacteria. He decided to make skin tests with influenza bacilli. By making the tests on children of all ages (from newly born infants to children of 15 years) he hoped that more light would be thrown on the problems of allergy, parallergy and so on. For the preparation of the vaccination material he used a twenty-four hour culture of influenza bacilli. He mixed with 20 cc. of distilled water an amount of bacilli equal to that on a well grown agar slant. This mixture was kept in the incubator for six days and then mixed with an equal amount of a 1.7 per cent solution of sodium chloride, so as to produce a physiologic sodium chloride concentration. The vaccination material obtained in this manner was slightly turbid and was not changed after three or four weeks' storage on ice. Since the size of the individual influenza bacillus varies greatly, the strength of the vaccination material was not expressed by the number of bacteria but rather by the degree of turbidity. The vaccination was done on the flexor surface of the forearm and the reaction was read after from twenty to twenty-four hours. Positivity was indicated by an inflammatory reaction varying in size from a bean to the palm of a child's hand. In case of severe reaction the center of the inflamed area was dark red or livid red. The total number of nurslings and children subjected to this test was 225. It was found that older nurslings (more than 3 months old) and children give a positive reaction in response to the cutaneous vaccination with the influenza bacilli. The resulting inflammation seems to be an allergic reaction. The nurslings, who were vaccinated during the first three months of life, rarely gave a positive reaction. The reaction was found to be abolished not only during influenzal bronchopneumonia but also during other febrile disorders, and the author thinks that this is the result of the influence exerted by the exhausted organism on the allergic condition.

Irradiation of Hydrocephalus.—According to von Lederer, the treatment of hydrocephalus has been mostly symptomatic, for lumbar and cisternal punctures or puncture of the corpus callosum and drainage produce as a rule only a temporary improvement. Since several investigators had seen favorable results from the use of roentgen rays in animal experiments on hydrocephalus, the author resorted to this treatment in seventy-three cases from the neurologic department of the children's clinic. Of this number, fifty-five had hydrocephalus. The irradiations were given with a maximal tension of 200 kilovolts, the filter consisted of 0.5 mm. of tin with 1 mm. of aluminum, and the focal skin distance was 30 cm. To five fields, measuring 6 by 8 cm., 10 per cent of the unit skin dose was applied. As a rule, the different fields were irradiated at intervals of two days. (In some cases 30 per cent of the unit skin dose was applied to three fields at weekly intervals.) The series were repeated two or three times within a period of from four to eight weeks. The author gained the impression that roentgen therapy promises favorable results in cases of hydrocephalus in which a hypersecretion of fluid exists, whereas there is less probability of cure in cases in which there is subnormal resorption or occlusion. Roentgen therapy was found helpful also in some cases of poliomyelitis, in that the paralytic conditions improved or disappeared. However, the results cannot be definitely ascribed to the influence of the rays, for spontaneous improvements are quite likely. In cases of imbecility, particularly in mongolian idiocy, roentgen therapy promises no results.

Deutsche medizinische Wochenschrift, Leipzig

61: 1345-1384 (Aug. 23) 1935. Partial Index

Increased Incidence of "Aseptic" Encephalomeningitides in Silesia. J. Lange.—p. 1345.
Use of Amidopyrine and of Similar Substances. H. Dennig.—p. 1349.
*Nasal Application of Hypophyseal Preparations. L. Schneider.—p. 1351.
Pathogenesis and Course of Pyuria During Childhood. E. Holzmann.—p. 1352.
Does Oral Application of Saccharin Influence Blood Sugar? F. Fischler and A. Schröter.—p. 1354.
*Relations Between Stomach and Blood Picture. Mahlo.—p. 1358.

Nasal Application of Hypophyseal Preparations.—In discussing the use of the extracts of the posterior lobe of the hypophysis in obstetrics, Schneider points out that, because the extracts lose their efficacy when administered by mouth, it is necessary to administer them by injection. However, injections frequently prove annoying and, since it was discovered that the extracts of the posterior lobe of the hypophysis are absorbed by the mucous membranes, nasal application was tried. The author administered a pituitary preparation in the form of a snuffing powder and reaches the conclusion that, as regards its ecbolic efficacy, the pituitary snuffing powder is not superior to the administration by injection. However, the nasal administration is valuable.

Relations Between Stomach and Blood Picture.—Mahlo points out that, according to Naegeli, pernicious anemia does not have a uniform etiology but may be caused by different factors. He discusses liver therapy and Castle's principle and shows that there are at least two substances which influence the blood picture of pernicious anemia and that the normal function of the stomach is important for a normal blood picture. He shows that normal gastric juice forms the Castle principle only in the presence of food protein and thereby influences the blood picture. He cites studies on the gastric mucus, emphasizing the importance of its action as membrane and pointing out that gastric mucus has the capacity to absorb not only hydrochloric acid but probably also ferments and food hormones. He assumes that the gastric mucus is capable of storing the Castle factor as such or in a preliminary form. Then he shows that gastric mucus which has been saturated with hydrochloric acid has the same effect on the blood picture of pernicious anemia as does the Castle principle but that the formerly employed pepsin hydrochloric acid therapy is unsatisfactory. He points out that Hitzenberger has assumed that polyglobulism is probably caused by an excess of Castle's principle. The author is inclined to agree with this, but instead of accepting Hitzenberger's suggestion to counteract this by resection of the pylorus he cites Mulli's observations, in which it was found that the Castle factor is destroyed if there is a p_H of 6.6, and he suggests that alkali therapy in the form of large doses of sodium bicarbonate will counteract the excessive production of Castle's principle and the polyglobulism.

Medizinische Klinik, Berlin

31: 1093-1124 (Aug. 23) 1935. Partial Index

*Significance of Osteodystrophia Fibrosa Generalisata (Recklinghausen's Osteitis Fibrosa) for Obstetrics. L. Nürnberger.—p. 1093.
Hereditary Disorders of Organ of Hearing. H. Leicher.—p. 1096.
*Erythrocytosis in Gastric and Duodenal Ulcers. H. Otto.—p. 1105.
Diagnosis of Suppurating Mediastinitis. R. Pohl.—p. 1106.
Progress in Treatment of Concomitant Strabismus. K. Ascher.—p. 1108.
Aspects of Pyemia Caused by Bacillus Fusiformis. L. Wechsler.—p. 1110.

Recklinghausen's Osteitis Fibrosa in Obstetrics.—Nürnberger shows that Recklinghausen's osteitis fibrosa is just as important for obstetrics as is osteomalacia, because it may produce pelvic deformities that greatly resemble those caused by osteomalacia. In reviewing the aspects of osteitis fibrosa,

he shows that, in spite of the pathologic anatomic differences between this disease and osteomalacia, the two disorders may nevertheless produce similar changes in the body structure so that the external aspects will not permit a differentiation. For this reason osteitis fibrosa is frequently not recognized and is erroneously diagnosed as osteomalacia, which results in grave consequences, because the patient does not receive the proper causal therapy, which should consist in the extirpation of the parathyroid "tumors." The author points out that the demonstration of hypercalcemia, hypercalciuria or urinary concrements in patients in whom osteomalacia had been thought of militates in favor of Recklinghausen's osteitis fibrosa and against osteomalacia. Roentgenoscopy of the entire skeleton will definitely decide the diagnosis.

Erythrocytosis in Gastric and Duodenal Ulcers.—The detection of an erythrocytosis in the blood picture of a woman with duodenal ulcer induced Otto to study the incidence of erythrocytosis in patients with gastro-intestinal ulcers. Observations on several hundred patients with ulcer revealed that erythrocytosis exists in a large number of these patients. The author points out that continuous dripping of blood, which characterizes some ulcers, stimulates the bone marrow, which in turn responds with an increased erythropoiesis. The excessive formation of young erythrocytes is indicated by the greater number of reticulocytes in the blood. The blood pictures of patients with gastritis and with gastric cancer were likewise examined and the author records the results of his studies in tabular reports. He reaches the following conclusions in regard to the rapid determination of the origin of a gastro-intestinal hemorrhage: 1. A secondary anemia with a hemoglobin content of less than 70 per cent and 3.5 million erythrocytes, which cannot be traced to a manifest hemorrhage, indicates hemorrhage of carcinoma. In this case the examination of the stool reveals occult blood. 2. In nonbleeding or slightly bleeding ulcers the blood status varies between 70 and 90 per cent hemoglobin content and between 3.5 and 4.5 million erythrocytes. 3. An erythrocytosis in patients with ulcer symptoms indicates the presence of a chronic bleeding ulcer, even if the examination of the stool is negative. In these patients the hemoglobin content is usually above 100 per cent and the number of erythrocytes above 5 million. 4. In patients who present the symptoms of gastritis and in whom the anamnesis indicates ulcer, the existence of an erythrocytosis justifies the diagnosis of ulcer, even if the roentgenologic examination is negative. 5. After gastro-enterostomy and after Billroth I and II operations the existence of an erythrocytosis indicates a peptic lesion, even if the roentgenogram is negative.

Zentralblatt für Gynäkologie, Leipzig

59: 1985-2048 (Aug. 24) 1935. Partial Index

Internal Hyperrotation of Head and Forceps Delivery. R. Cordua.—p. 1996.

Obstetric Twilight Sleep Produced by Rectal Administration of Evipan. H. Dietel.—p. 2003.

*Attempt to Simplify and Accelerate Hormone Diagnosis of Pregnancy. A. P. Nikolaew.—p. 2010.

Hormone Diagnosis of Pregnancy.—Nikolaew calls attention to studies conducted by Ludwig and Riss, who observed that red rays activate the ovarian hormone. He mentions that the pregnancy test can be completed more quickly in rabbits than in mice and that an addition of sugar to the urine that has been detoxicated with ether makes the test clearer. By utilizing these various improvements, he simplified and accelerated the pregnancy test. The urine is treated with ether and sugar and is then exposed for five hours to red rays. Then 15 cc. of the urine is injected under the skin (back) of a female rabbit. After eighteen or fifteen hours, and in sexually mature rabbits even after twelve hours, the reaction is complete. Later studies disclosed that it is unnecessary to treat the urine with ether and sugar and that, after the preliminary irradiation with red rays, urine that has not been treated with ether and sugar will produce a reaction in from twelve to fifteen hours. The preliminary irradiation of the urine with red rays was tried also when mice served as test animals, and in a few cases the test proved complete after fifty-one or sixty hours and in most cases after seventy-two hours.

Hospitalstidende, Copenhagen

78: 821-832 (Aug. 6) 1935

*Influence of Histamine on Renal Function. T. Bjering.—p. 821.

Influence of Histamine on Renal Function.—Bjering found that the injection of 1 mg. of histamine resulted in reduction of both the systolic and the diastolic blood pressure and simultaneously a decrease in the creatinine and urea clearance, more marked in the latter. There was no constant relation between the decrease in blood pressure and clearance. The creatinine and urea index increased, showing that both the glomeruli and the blood vessels about the tubuli were affected by the histamine. In a patient with essential hypertension, in whom the increased blood pressure was especially pronounced, albuminuria appeared without other demonstrable pathologic changes in the urine. The eliminated amount of total protein followed the variations in filtration. The total protein in the blood was not influenced by the injections of histamine.

Ugeskrift for Læger, Copenhagen

97: 837-866 (Aug. 15) 1935

*Poliomyelitis in Denmark in 1934 and 1935. Committee.—p. 837.

Poliomyelitis Epidemic in Hadersley in 1934 (from July 25 to Dec. 31): General Remarks, Casuistic, Poliomyelitic Radiculoneuritis. M. Norn and N. B. Møller.—p. 841.

*Poliomyelitis Epidemic in Faaborg in 1934. R. E. Christensen.—p. 855.

Nonhospitalized Cases of Abortive Poliomyelitis? L. C. Stage.—p. 857.

Poliomyelitis in Denmark.—The committee appointed to investigate the poliomyelitis epidemic of 1935 by questionnaires to hospitals obtained information on 3,938 cases of which 78 per cent were admitted within the first two days of the disorder. Serum treatment was given to 80 per cent, dementia paralytica occurred in 15 per cent and the mortality was 1.9 per cent. A high cell count was found to be unfavorable prognostically. Experience showed that the length of hospitalization should hardly be less than three weeks. There were only half as many cases of dementia paralytica among the patients given serum treatment within the first forty-eight hours as among those treated later. The recommended lines of treatment are early hospitalization and serum treatment, a beginning dosage of about 1 cc. per kilogram of body weight, if feasible intravenously, possibly intramuscularly, and immediate repetition of the serum injection, perhaps with larger doses, on the slightest sign of aggravation.

Poliomyelitis Epidemic in Faaborg in 1934.—Christensen's material consists of 600 cases. He asserts that infection was probably by contact (droplet infection?), the port of entry being most often the tonsils. Transmission of the infection was presumably as a rule in the incubation stage, but occasionally after the end of the disturbance (bacillary carriers?), and in these cases the period of incubation appeared to be about one week. Continued use of convalescent serum is advised.

97: 891-912 (Aug. 29) 1935

Schizophrenia (Dementia Praecox). H. H. Reistrup.—p. 891.

Investigation on Tuberculin Sensitivity in Tuberculous Lymphadenitis. Illuminated by Graduated Intracutaneous Reactions, Together with Significance of Latter in Diagnosis. P. Bonnevie and T. K. With.—p. 893.

Allergic Vasomotor Rhinitis in Bakers. K. H. Baagøe.—p. 897.

*Influence of Adrenal Cortex Extract on Length of Life of Adrenalectomized Young Rats, Together with Length of Life After End of "Sufficient" Hormone Treatment. P. Schultzer.—p. 901.

Influence of Adrenal Cortex Extract on Adrenalectomized Rats.—Schultzer used adrenalectomized rats 4 or 5 weeks old. In his earlier control experiments 100 per cent of the rats died in an average of 5.7 days. By means of daily injections of adrenal cortex extract, twenty-seven animals were kept alive for three weeks; on cessation of the injections they died in an average of 5.9 days. These results, he says, demonstrate that the administered extract was effective, and the fact that the rats do not die sooner after adrenalectomy than after adrenalectomy combined with three weeks of extract treatment shows that death does not depend on operative shock and that the organism apparently has no store of the adrenal cortex extract.